MAY 2 9 1945

ENGINEERING
LIBRARY

ADVANCED MANAGEMENT

Quarterly Journal

The Society for the Advancement of Management

Principles of Organization and Operation

A Look Ahead for Management

Maxims of Management

Better Wage Incentives

Application of Burden in Unit Costs

Psychiatry in Industrial Accidents

April-June, 1945 Vol. X, No. 2

ADVANCED MANAGEMENT

Quarterly Journal

Published by THE SOCIETY FOR THE ADVANCEMENT OF MANAGEMENT, INC.

84 William Street, New York 7, N. Y.

VOLUME X April June, 1945 NUMBER 2

CONTENTS

Comment—*Ordway Tead* 41
Principles of Organization and Operation—*Charles C. James* 42
A Look Ahead for Management—*S. H. Thompson* 53
Maxims of Management—*Oswald Knauth* 55
Better Wage Incentives—*Phil Carroll, Jr.* 60
Application of Burden in Unit Costs—*H. P. Dutton* 64
Psychiatry in Industrial Accidents—*Lowell S. Selling* 70
Reviews 75
B. Eugenia Lies 76

EDITORIAL COMMITTEE

ORDWAY TEAD, Editor of Economic Books, Harper & Bros., New York, *Chairman*

J. ANSEL BROOKS, Professor Emeritus, Newark College of Engineering, Madison, Conn.

EVELYN BUCKLEY, Consultant, New York

Opinions herein expressed are not to be interpreted as official Society policy. They are solely the responsibility of the respective authors.

EDITORIAL BOARD

C. E. BULLINGER, Head, Department of Industrial Engineering, The Pennsylvania State College

H. P. DUTTON, Dean of Evening Division, Illinois Institute of Technology, Chicago

JOHN J. FURIA, Division of War Training, New York

L. CLAYTON HILL, Works Manager, Eagle Pencil Company, New York

VERNON D. KEELER, Management Consultant

ASA S. KNOWLES, Dean, School of Business Administration and Director of Industrial Extension, Rhode Island State College

RENSIS LIKERT, Head, Division of Program Surveys, Bureau of Agricultural Economics, Washington, D. C.

WILLIAM E. MOSHER, Director, School of Citizenship & Public Affairs, Syracuse University

D. H. MACKENZIE, Associate Professor of Management and Accounting, University of Washington, Seattle

E. W. PALMER, President, Kingsport Press, Inc., Kingsport, Tenn.

PHILIP O. YEATON, Head, Department of Industrial Engineering, University of Florida

DALE YODER, Professor of Economics and Industrial Relations, University of Minnesota

ADVANCED MANAGEMENT is the successor to The Society for the Advancement of Management Journal; the Bulletin of the Taylor Society and of The Society of Industrial Engineers. Published quarterly. Per year to Members $3.00, to others, $6.00. This issue $1.50. It is included in the indexing of the Industrial Arts Index which is obtainable at Public Libraries.

The reprint of extracts up to 50 per cent of the whole of any article herein is authorized, provided the source is mentioned. The full name of this periodical must be used when quotations, reprints or abstracts of material are made, as follows: ADVANCED MANAGEMENT, Quarterly Journal of The Society for the Advancement of Management. In return the Society appreciates complimentary copies of the publications containing such reprints. Permission to reprint more than 50 per cent must be arranged through the office of the Society.

Re-entered as second-class matter, December 13, 1939, at the Post Office at New York, N. Y., under the Act of March 3, 1879.
Entered as second-class matter, June 17, 1943, at the Post Office at York, Pa. Printed in U.S.A.

T
ma
tai
cia
cer
file
tha
the
hav
tra
Do
ext
and
nee
and
of
ma
to
job
kn
his
ent
ab
tiv
of
job
re
co
wi
un
ho
m
at
be
if
br
in
qu
fo
re
an
hi
ne
im
pr
oc
or
th

Comment

THE importance of the foreman's job increases when production expands rapidly; and when it contracts rapidly. It increases as the value of the machinery and materials used increases. It increases as the need for maintaining good working relations with the employes is appreciated. It increases wherever management is seriously concerned to keep in close communication with the rank and file. In short, the foreman's job was never more important than it is today and will be tomorrow.

Yet top management has lagged seriously in appraising the situation and in doing enough about it. To be sure we have for a generation been propagandizing for foreman's training and the war training work forwarded by Messrs. Dooley and Dietz has unquestionably helped greatly in an extraordinary emergency.

But the problem now goes deeper and needs a fresh look and complete restatement. If proof of this contention is needed the growing movement for the unionizing of foremen and for collective dealing with them is evidence enough of a deepseated disaffection. It is evidence from the foreman's side. The evidence from the managerial side I propose to comment upon here.

Basically the problem is as to the nature of the foreman's job. What must he know? What must he be? His necessary knowledge, his educational background, his authority, his prestige, his reward, his incentive, his stake in the enterprise—all of these are due for re-study. And it is probably true that until the foremen themselves in some collective fashion share in the reappraisal of their function and of its value, the greatest gains will not be made. Just as the job evaluation and wage classification developments of recent years have been facilitated by being included in collective bargaining procedures, so the foreman's status will probably be best advanced in a really penetrating way under some form of shared group thought and action.

But the point which this comment is designed to stress, however, does not bear on the issues of foreman unions so much as it does on top management's awareness of and attitude toward the whole matter of having the foreman become as competent for his responsibilities as he has to be if the human relations in the shop are not to break down or break out.

What needs to be asked in the offices of every major industrial executive up and down the land should be such questions as: Do we know what is required today of our foremen in terms of knowing, doing, being? Have we a realistic sense of what the foreman is up against on the job, and how much help the company gives him to assure truly high grade performance? Do we have plans for developing new foremen and for helping present ones to grow and improve? If present foremen have to be demoted when production slackens or veterans return, how is this to occur without destroying the morale of the individuals or of the organization?

Everything here said has no intention of belittling all the efforts to date. But I am sure the hot spot of tomorrow's management is the reconceiving of foreman status and the reconditioning of foremen for that status.

The problem goes beyond training to education. It goes beyond upgrading to systematic programs of understudying, apprenticeship in assisted foremanship jobs under careful educational supervision, the use of far more college and engineering school graduates as foremen, and the training of far more people in "technical institutes" and junior colleges for introduction into foremanship posts after suitable try-outs at shop work.

The program of foreman recruitment for tomorrow will give more attention to testing and screening out those with executive capacity, with potential deftness in handling human relations, with capacity for leading men in the same mood and flavor as we find it in the quarterbacks and captains of football teams.

The program of foreman enlistment and development will go on to show—in terms of annual bonuses and profit-sharing participations, to say nothing of the urgently needed higher salaries which will evidence the uniquely needed value of their services—that the foremen have a stake in the success of the enterprise—a stake closely tied in with the success of their departments. And this success is to be measured not only in low unit costs but in terms of the quality of creative aids to production which arise in each department among their men under improved leadership.

Foremen cannot—in the effort to get good work out of good men—overcome the handicaps of stingy and domineering managers. Foremen's successes on the qualitative level we must be striving for, cannot occur alone. And, on the other hand, top managers who see industry as a creative service to society cannot operate creatively if their foremen are petty tyrants in their small sub-domains.

We need a vast deal of publicizing with top managers for a new deal for, with and by foremen. They tend to be by-passed today. Tomorrow they must be like the lens which focuses the sun's rays on any object to the point where it "puts the heat on" in an effective and genuinely heart warming way. The managerial associations, the foremen's associations and the foremen's unions should at an early date collaborate on a conference to put pressure behind the effort to level up foremanship. This conference would consider the relation of organized education to foremanship needs, the compensation of foremen, the authority of foremen, the developmental program for sub-foremen and foremen within industry. It is trite to remind ourselves of the number of foremen American industry needs in comparison with the number of factory superintendents it needs. But it will never be too platitudinous to remind ourselves of what we are always forgetting,—that the first line supervision of American industry is the responsible and crucial agency of amity and efficiency in operation—once top management has understood and affirmatively agreed that this fact *is* a fact—about which they must act accordingly.

ORDWAY TEAD

Principles of Organization and Operation

By CHARLES C. JAMES

Associate Counsellor, Stevenson, Jordan & Harrison, Inc., New York

Introduction

CERTAIN organization principles appropriate in all departments of large corporations as well as in the corporation's top administrative organization have in my experience been found to fit general needs pretty well. Without presuming to offer them as a corrective for all malformations in corporate structure, I should like to set them forth afresh for critical evaluation by our membership. A general discussion of the subject of sound organization and management should be a most timely contribution. Beyond question, the impending period of reorganization for post-war operations offers a unique opportunity for the advancement of management, which is the purpose of our Society.

Need of Dividing Responsibilities

Whenever two or more men band themselves together to conduct an enterprise, they must agree among themselves as to how responsibilities are to be divided. "You do this, and I will do that and so long as we stick to doing the things we each can do best we shall be able to accomplish more together than we could separately." The larger the enterprise, the more important for all engaged in it to understand who is to do what. Lack of such clear understanding is the cause of much of the misdirected effort from which most business organizations suffer. This is a good time to clear the fog. Every corporation officer and every department head should know definitely just what is expected from him, what is to be the measure of his performance. Without such a clear understanding of the scope of his responsibilities, he cannot do his work with confidence and effectiveness. Moreover, he cannot be held accountable when he does those things he ought not to do or leaves undone those things he ought to do.

It must be recognized, however, that the outlining of delegated responsibilities is not a task that can be performed hastily or dogmatically. In assigning duties among individuals there is no graver error than the assumption that all are qualified to handle effectively whatever responsibilities are commonly assigned to their respective positions. Men are not born or developed to fit into precise patterns. The functions delegated to each man can be performed only within the limits of his individual capabilities.

The best procedure for preparing an outline of responsibilities is first to draft an ideal organization chart, then to sit down with the individuals whose names appear on the chart and discuss specific responsibilities with them at length and with infinite patience, and then to allocate responsibilities wherever common aggreement dictates. For the chief executive himself to handle this undertaking successfully is difficult because he tends to dominate decisions, which is bad. Moreover, it is practically impossible for him to find the time to make a good job of it. It is far better to delegate the project to someone who has no personal axe to grind, whose thinking is normally objective and unbiased, and who has a knack for bringing out all phases of every subject and discussing them. That method, developing a full understanding of the facts among all concerned, leads almost automatically to all-round agreement on conclusions, which may then be submitted to the chief executive for his approval or revision.

To start the job off properly it is most important that sufficient time be given to apportioning top responsibilities. Unless there is a well-understood and hearty agreement among the top executives themselves as to the duties for which each of them is responsible the delegation of responsibilities will grow increasingly confused the further we go down the line. A job well planned is well begun, which, as has been said, is half the battle. The converse of this is not always appreciated. A job poorly planned is ill begun and cannot be well done.

Two Kinds of Responsibilities—Getting Facts and Getting Action

In every one of these specific responsibilities, we find the need first for technical knowledge, and second for decision and action. Sometimes one individual can handle both duties equally well, but not always—in fact, not often. The lawyers say that a man who is his own lawyer has a fool for a client. By the same token, a foreman who undertakes to set his own time standards

usually makes a mess of it. It is equally true that a general manager who presumes to judge operating results on the basis of his own ideas of cost standards is more than likely to go off the beam, disastrously. Nevertheless, in every situation, some one individual must be charged with the responsibility for taking action based upon his own judgment. The little blue card of the Job Relations Training course, given by the War Manpower Commission, aptly breaks down the procedure for handling every problem into four sections:

1. Get the facts.
2. Weigh and decide.
3. Take action.
4. Check results.

The essential need is to make sure that our executives act with informed judgment. Fact finding may call for the most exhaustive technical research, requiring time and highly specialized training. Our most expert technicians, being characteristically the most indecisive of men, are seldom sure when they have gathered enough facts to justify conclusions. A good executive, on the other hand, will weigh and decide the relative merits of all the facts and opinions that he can secure without undue delay, and having done so, will take action.

Line and Staff

When specialists are delegated with the responsibility of gathering facts on which action is to be based, we customarily say they are on "Staff" duty, to distinguish their functions from the "Line" responsibility of weighing advice and deciding upon the action which is to be taken. Under this distinction, the need and scope of Staff advice called for in each case becomes a question for the Line executive to decide. We may adopt a functional distinction between these duties and define them as follows:

Line Functions carry responsibility for action. Each executive in line work must act on his own responsibility except so far as he is governed by instructions from his immediate superior, or from an expressly delegated representative.

Staff Functions are advisory only. Men on staff duty have unrestricted authority to discuss matters within the scope of their assignments, provided they keep the appropriate line executives informed of the nature and purpose of their inquiries. For example, the mechanical engineer or any member of his department may discuss directly with a workman the details of the workman's job, but before doing so, he will inform the foreman of his intentions. Any suggestions offered by staff men may be adopted by men in line positions, provided they do not differ from officially prescribed methods, but such suggested practices will not be made permanently effective without the knowledge and approval of the responsible line executive.

Interplay of Line and Staff Action

As a concrete illustration of the interplay of line and staff action, consider how an experienced works manager goes about his task of improving machinery and equipment to expand production, improve quality, and lower cost.

The works manager is initially responsible for deciding what additions and betterments should be undertaken, but he will welcome suggestions and recommendations from everyone in the organization who is qualified to advise him.

Those who have the best chances for finding ways to introduce mechanical improvements are the workmen who operate the machines and other facilities, and the foremen and general foremen by whom their work is supervised. In addition, the master mechanic and his mechanics who are responsible for maintaining the machines and facilities, have also direct and intimate knowledge of where improvements may be introduced to advantage.

The mechanical engineer, the methods and standards engineer, and the research engineer, can give the works manager not only the benefit of their own specialized knowledge, but also information obtained from study of technical publications in which new and improved appliances are described and advertised.

The purchasing agent will have information brought to him by salesmen for machines and tool builders, which he should pass on to the works manager.

Before expenditures for additions and betterment may be undertaken, the works manager must obtain an appropriation of capital, authorized by the board of directors. In submitting his request for an appropriation, he will support his recommendations with adequate reasons, including the expected benefits to be derived from the expenditure, an estimate of the savings, or increased profits anticipated, and an estimate of the cost. In preparing this information, he will call freely upon the advice and assistance of the accounting and purchasing departments.

Detailed drawings and specifications will be prepared for him by the engineering department.

When an appropriation has been granted, the necessary work and expenditures will ex-officio be carried out under the immediate direction of the works manager, but when the size of the project warrants it he will arrange for progress inspection by the mechanical engineer as the work proceeds.

He will look to the purchasing department and the cost department to keep him informed of commitments and expenditures, to make sure that he is not exceeding the amount of his appropriation.

The foregoing example illustrates how staff men gather facts and proffer advice, but never assume to direct. Each line executive while looking to his immediate chief for instructions, will have full responsibility for carrying on the work which is under his direction. In the performance of his duty, he will not be subject to interference outside of the direct line of authority. No man can serve two masters. But this does not mean at all that he cannot wait upon the needs of many men, or should not seek good advice wherever it may be found.

Inter-departmental Functional Demands

Neither does this principle mean that a man may disregard the functional requirements of line executives in other divisions than his own. For example, a works manager must produce the product for which the sales division gives him orders, and he must make the reports required of him by the accounting division.

Line Executives Are Not Excluded from Assuming Staff Responsibilities

Furthermore, line executives may themselves perform staff duties. To illustrate—the purchasing agent is performing a line duty in deciding *how* and *where* to place orders to obtain materials which the operating manager has ordered. But in suggesting to the operating manager *what* materials to order, he is performing a staff duty, since the operating manager is free to adopt the suggestion or not, as he chooses. Conversely, the operating manager would be exercising merely a staff function if he made suggestions to the purchasing agent as to prices and sources of supply.

Organizing for Management

Need for a Master Planner

In developing the general responsibilities in an organization, one of the most important prerequisites is to provide for proper planning.

The operating activities of a business are carried on under a sales manager and an operating manager. Between these two, however, there should be a master of planning to coordinate their activities. The primary responsibility of the sales manager is to sell the goods produced by his company in the markets which it is the policy of the company to penetrate, and at prices established to produce maximum sales at reasonable profits. It is the duty of the manager of operations to manufacture products which the company has decided to sell according to the designs and in the manner in which such production has been planned to serve the company's sales policy. Between these two and serving both should be a master planner, who will spend all of his time exploring and coordinating the business factors that lead to profitable operations.

Among specific planning activities requiring attention are:

1. *Planning for Sales*
   (*a*) Research
   (*b*) Market surveys
   (*c*) Analysis of sales
   (*d*) Design of product
   (*e*) Cost finding
   (*f*) Pricing
2. *Planning for Operations*
   (*a*) Material and manufacturing specifications
   (*b*) Method and time studies
   (*c*) Improvements of machinery and equipment
   (*d*) Plant layout

Specific planning activities such as these are staff functions and should be handled under the general supervision of the master planner by a flexible group of technicians, many of whom may come and go. Often they may best be carried out by professional consultants whose engagements terminate with the completion of special studies or installations, or by executives temporarily detached from line responsibilities. They should not be assigned to line men who must carry on under the pressure of routine duties which leave them no time for planning work. A planner needs time to study, to browse, to cogitate, to draft and redraft proposed recommendations. He needs time, also, to talk with men throughout the organization where many good ideas lie undeveloped because no one jars them loose and gets them up to the attention of the executives who will recognize their merit. In any organization, at the back of the minds of men up and down the ranks, are valuable

ideas that never come to light for lack of some intelligent and sympathetic co-worker with whom to discuss them and thereby help to crystallize them into dynamic suggestions for bettering the service. Clear thinking about anything is the hardest undertaking in the world. Seldom can anyone do it unaided. How much could be accomplished if every ambitious man and woman could have available someone besides the boss to talk with. What is needed is an intelligent and sympathetic person with whom to discuss and clarify half-formulated ideas, one who will neither belittle them nor steal the credit for them if they are good, or even contain the germs of good.

Organization Charts

Illustrative charts embodying these principles of organization here follow:

Master Chart	—Fig. 1	(Use of names in these
Sales	—Fig. 2	charts of any persons,
Planning	—Fig. 3	living or dead, is with-
Manufacturing	—Fig. 4	out implication)
Purchasing	—Fig. 5	
Finance	—Fig. 6	
Plant No. 1	—Fig. 7	

Outlines of Responsibilities

Too frequently all official interest in the delegation of responsibilities ends with the preparation of charts. The charts are framed and hung on the wall or put under the glass top of a desk or in a desk drawer and never referred to again except to settle an argument over the extent of someone's jurisdiction. This is not surprising because an organization chart is too indefinite to provide a dynamic guide for specific performance. The *Chart* always needs to be supplemented by *outlines* of the scope and specific duties of officers, department heads and other executives. The activities of the chief executive are limited by the terms of the corporation's charter and by-laws and by such laws, regulations, and edicts as control the corporation's right to do business. He has the privileges of an economic royalist, which means usually that he has been entrusted with a considerable sum of other peoples' money which he is expected to find ways to put to as profitable use as the law allows and his board of directors will approve. He has to decide, however, what part of his responsibilities he will entrust to his immediate subordinates, and what he will withhold for himself, and his decisions should be set down for all to see. Then each subordinate executive should be at liberty, except as otherwise expressly directed, to delegate to those next in rank such part of his own specified responsibilities as he may choose, and so on down the line. Illustrative outlines of responsibilities which follow, for the Vice-President in Charge of Sales and for one of his Division Sales Managers, show the extent to which the head of the sales division has seen fit to delegate his own specific responsibilities to one of his immediate subordinates:

VICE-PRESIDENT—SALES DIVISION

(Responsible to President)

Scope of Responsibility

Vice-President in Charge of Sales is responsible for procurement of customers' orders by entire sales force, conforming therein to regulations prescribed in current Executive Orders and to directions of the President.

Specific Responsibilities

1. Make all direct contacts with customers.
2. Fix sales territories and salemen's quotas.
3. Select, develop and supervise an adequate sales force, operating under an equitable incentive compensation plan and satisfactory working conditions, with appropriate training to develop capacity for up-grading.
4. Conform customers' orders and contracts to legal and other restrictions.
5. Develop and maintain profitable pricing policies.
6. Supervise estimating procedures.
7. Process customers' orders for transfer to production.
8. Limit sales solicitation to products and quantities which the Vice-President in charge of Planning finds suitable for manufacture, and for which the Purchasing Agent can buy materials to advantage.
9. Develop and serve the special needs of customers.
10. Maintain stocks of finished goods within authorized limits and in approved warehouses. Dispose of excess and obsolete stock.
11. Satisfy customers' complaints.
12. Direct advertising and publicity programs.
13. Maintain volume of sales in keeping with quotas as prescribed from time to time.

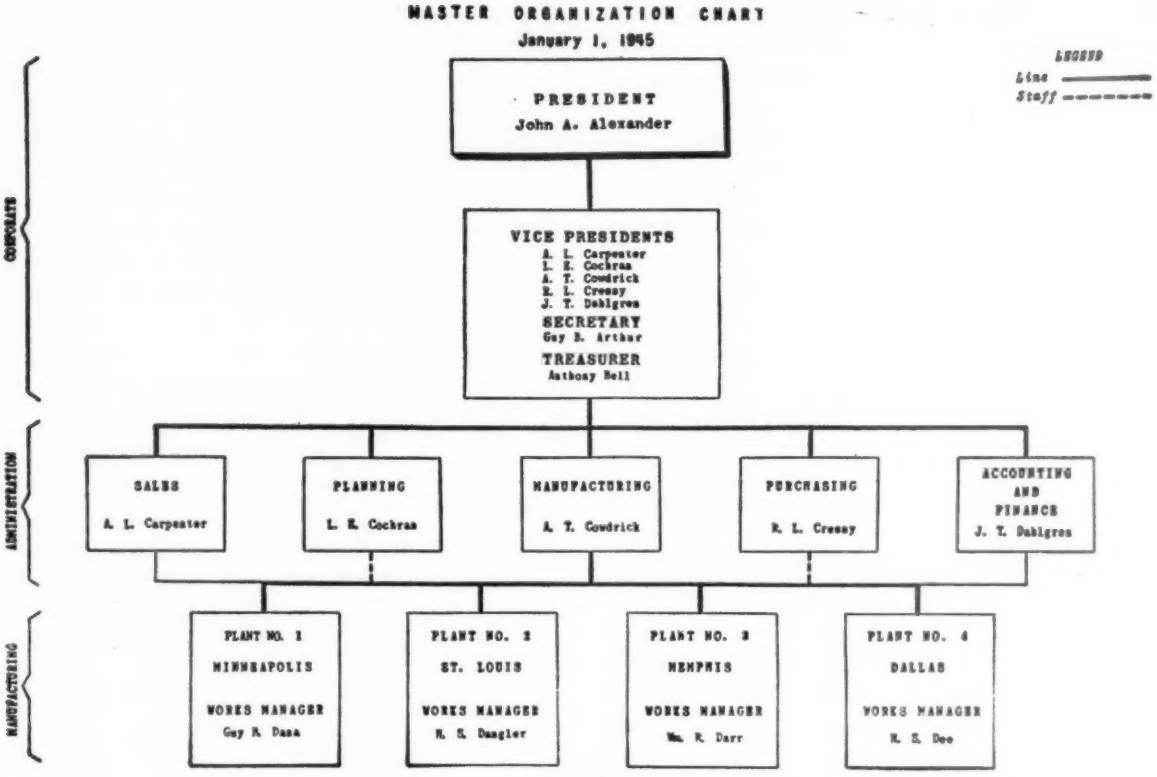
MASTER ORGANIZATION CHART
January 1, 1945
LEGEND
Line
Staff
CORPORATE
PRESIDENT
John A. Alexander
VICE PRESIDENTS
A. L. Carpenter
L. R. Cochran
A. T. Cowdrick
R. L. Cressy
J. T. Dahlgren
SECRETARY
Guy B. Arthur
TREASURER
Anthony Bell
ADMINISTRATION
SALES
A. L. Carpenter
PLANNING
L. R. Cochran
MANUFACTURING
A. T. Cowdrick
PURCHASING
R. L. Cressy
ACCOUNTING AND FINANCE
J. T. Dahlgren
MANUFACTURING
PLANT NO. 1
MINNEAPOLIS
WORKS MANAGER
Guy B. Dana
PLANT NO. 2
ST. LOUIS
WORKS MANAGER
R. S. Dangler
PLANT NO. 3
MEMPHIS
WORKS MANAGER
Wm. R. Darr
PLANT NO. 4
DALLAS
WORKS MANAGER
H. S. Doe

FIG. 1.

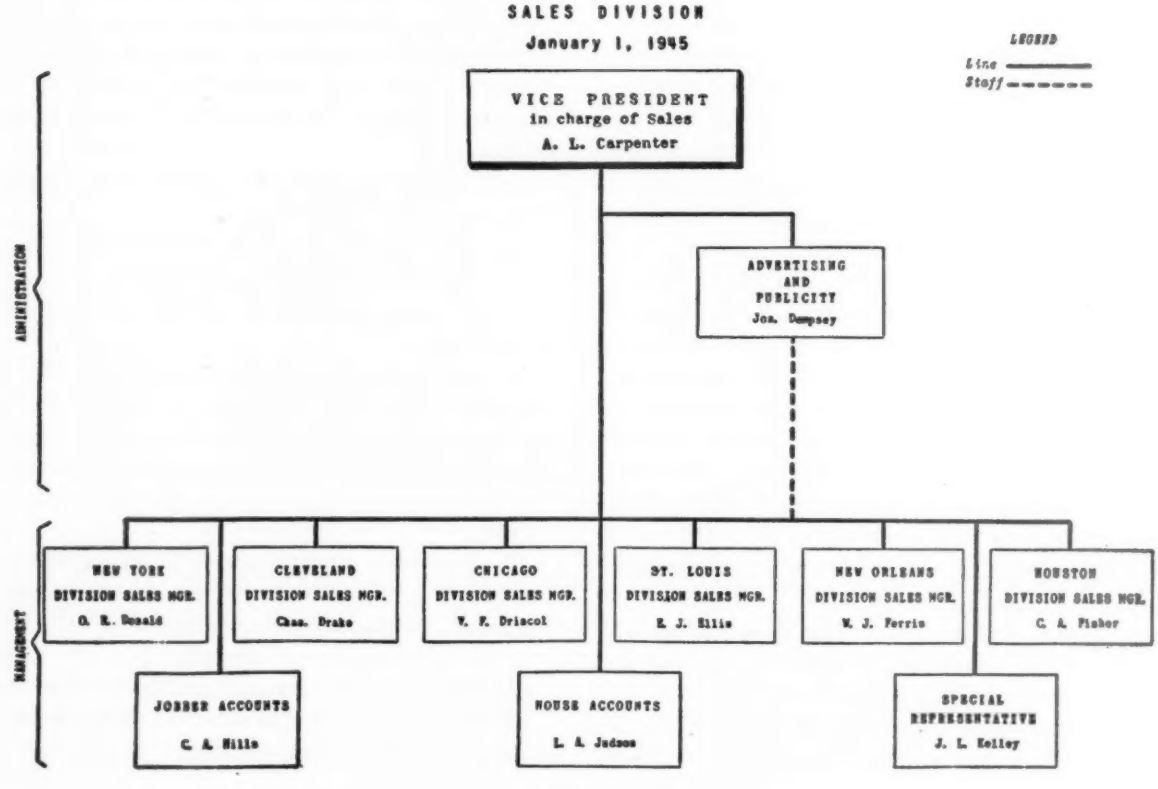
SALES DIVISION
January 1, 1945
LEGEND
Line
Staff
ADMINISTRATION
VICE PRESIDENT
in charge of Sales
A. L. Carpenter
ADVERTISING AND PUBLICITY
Jos. Dempsey
MANAGEMENT
NEW YORK
DIVISION SALES MGR.
O. R. Donald
CLEVELAND
DIVISION SALES MGR.
Chas. Drake
CHICAGO
DIVISION SALES MGR.
V. F. Driscol
ST. LOUIS
DIVISION SALES MGR.
E. J. Ellis
NEW ORLEANS
DIVISION SALES MGR.
W. J. Ferris
HOUSTON
DIVISION SALES MGR.
C. A. Fisher
JOBBER ACCOUNTS
C. A. Hills
HOUSE ACCOUNTS
L. A. Judson
SPECIAL REPRESENTATIVE
J. L. Kelley

FIG. 2.

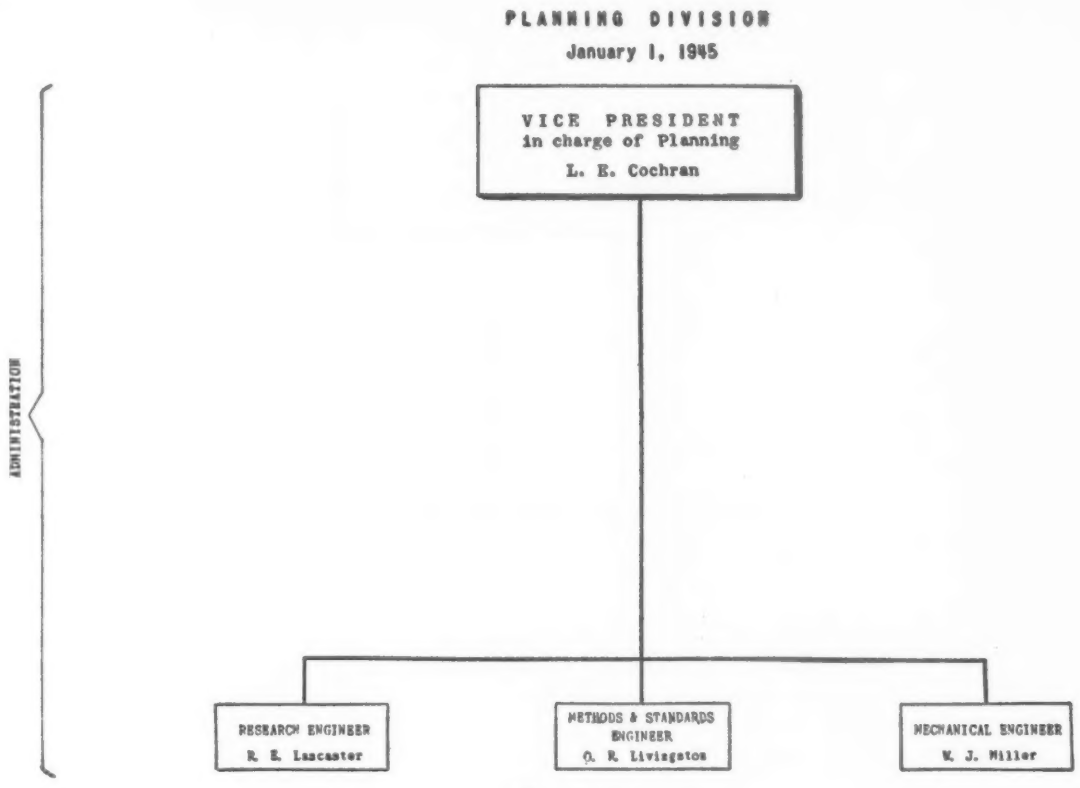
PLANNING DIVISION
January 1, 1945
ADMINISTRATION
VICE PRESIDENT
in charge of Planning
L. E. Cochran
RESEARCH ENGINEER
R. E. Lancaster
METHODS & STANDARDS ENGINEER
O. R. Livingston
MECHANICAL ENGINEER
W. J. Miller

FIG. 3.

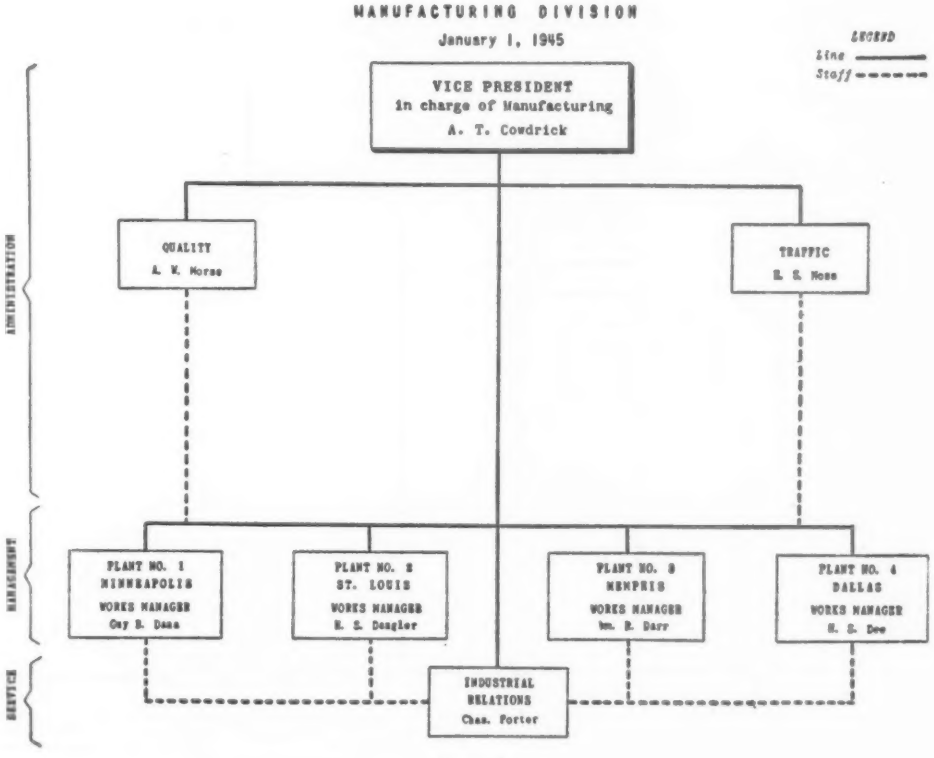
MANUFACTURING DIVISION
January 1, 1945
LEGEND
Line
Staff
ADMINISTRATION
MANAGEMENT
SERVICE
VICE PRESIDENT
in charge of Manufacturing
A. T. Cowdrick
QUALITY
A. V. Morse
TRAFFIC
H. S. Moss
PLANT NO. 1
MINNEAPOLIS
WORKS MANAGER
Guy B. Dana
PLANT NO. 2
ST. LOUIS
WORKS MANAGER
H. S. Doepler
PLANT NO. 3
MEMPHIS
WORKS MANAGER
Wm. B. Darr
PLANT NO. 4
DALLAS
WORKS MANAGER
H. S. Doe
INDUSTRIAL RELATIONS
Chas. Porter

FIG. 4.

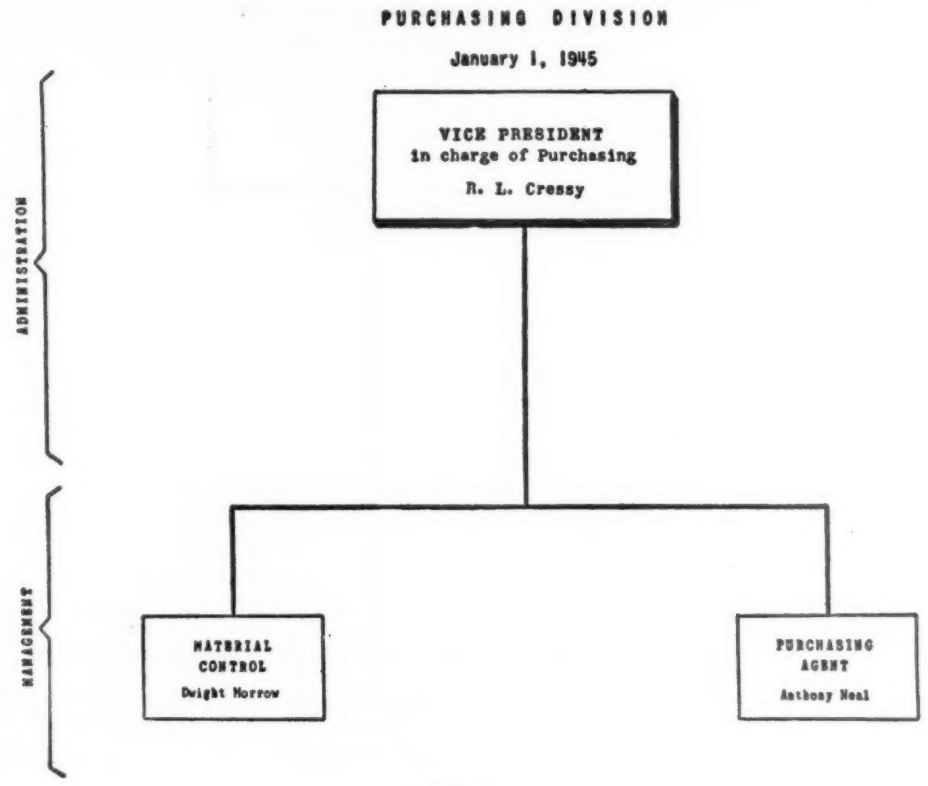
PURCHASING DIVISION
January 1, 1945
ADMINISTRATION
MANAGEMENT
VICE PRESIDENT
in charge of Purchasing
R. L. Cressy
MATERIAL
CONTROL
Dwight Morrow
PURCHASING
AGENT
Anthony Neal

FIG. 5.

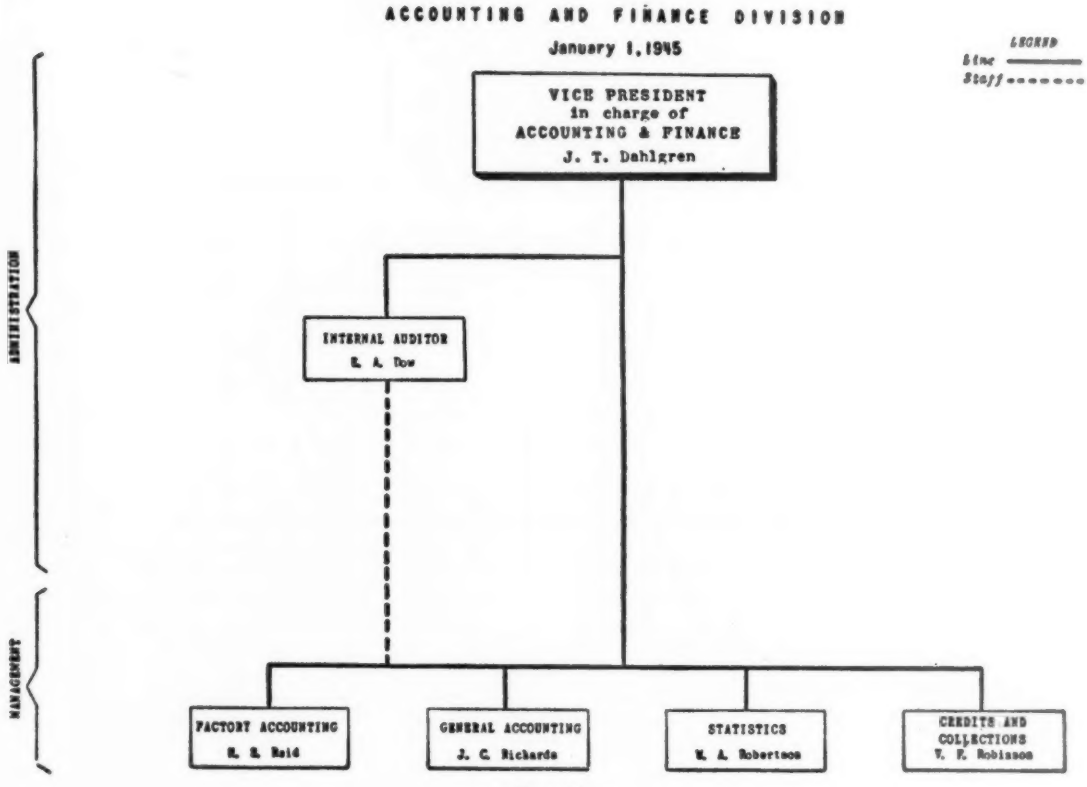
ACCOUNTING AND FINANCE DIVISION
January 1, 1945
LEGEND
Line
Staff
ADMINISTRATION
MANAGEMENT
VICE PRESIDENT
in charge of
ACCOUNTING & FINANCE
J. T. Dahlgren
INTERNAL AUDITOR
E. A. Dow
FACTORY ACCOUNTING
H. E. Reid
GENERAL ACCOUNTING
J. C. Richards
STATISTICS
M. A. Robertson
CREDITS AND
COLLECTIONS
V. F. Robinson

FIG. 6.

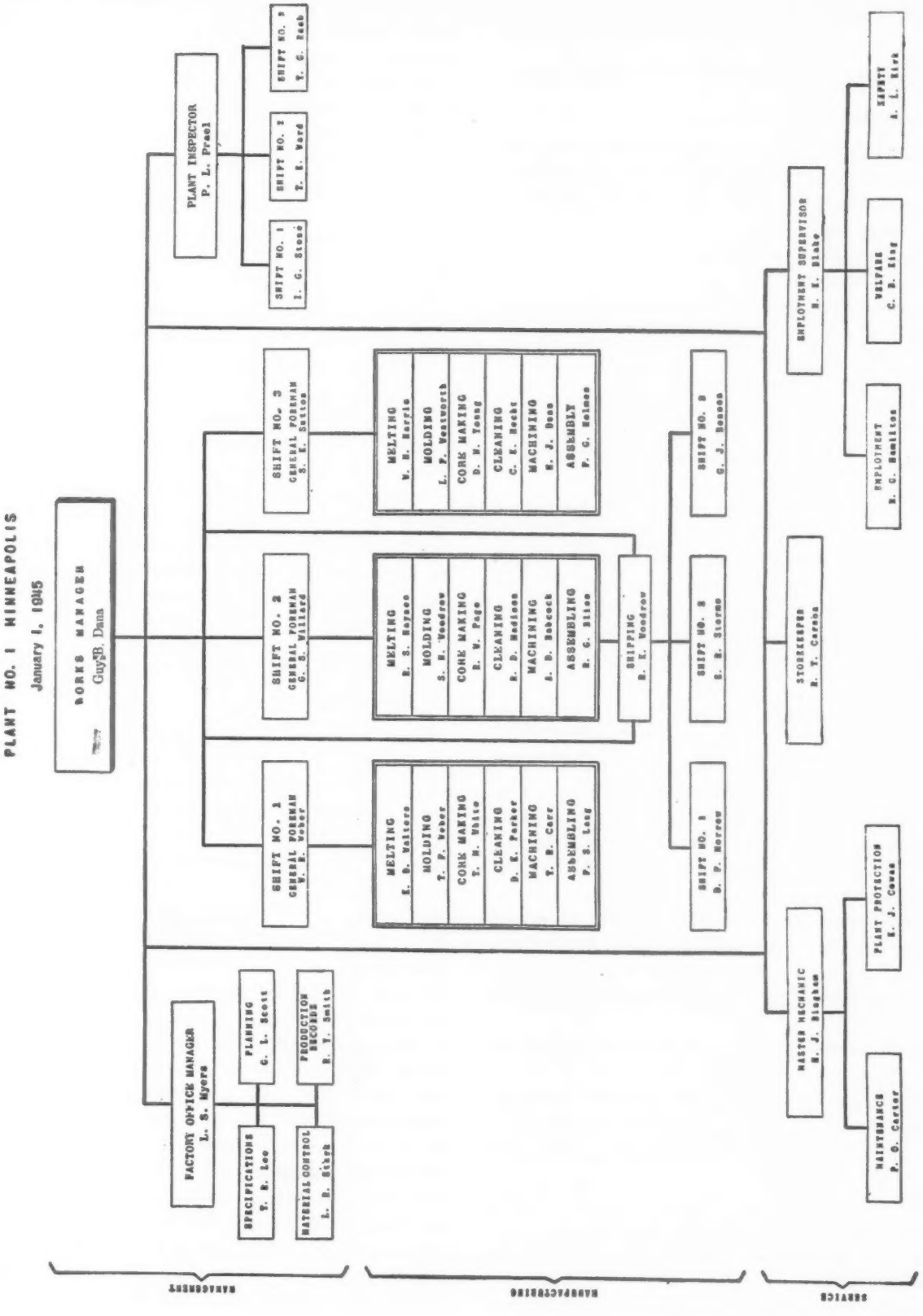
PLANT NO. 1 MINNEAPOLIS
January 1, 1945
WORKS MANAGER
Guy B. Dana
PLANT INSPECTOR
P. L. Prael
SHIFT NO. 1
L. G. Stout
SHIFT NO. 2
T. E. Ward
SHIFT NO. 3
T. C. Reeb
FACTORY OFFICE MANAGER
L. S. Myers
SPECIFICATIONS
T. R. Lee
PLANNING
G. L. Scott
MATERIAL CONTROL
L. B. Sisco
PRODUCTION RECORDS
R. T. Smith
SHIFT NO. 1
GENERAL FOREMAN
W. E. Weber
MELTING
E. B. Waters
MOLDING
T. P. Weber
CORE MAKING
T. H. White
CLEANING
D. E. Parker
MACHINING
T. B. Carr
ASSEMBLING
P. S. Long
SHIFT NO. 2
GENERAL FOREMAN
C. E. Willard
MELTING
E. S. Hayes
MOLDING
S. E. Woodrow
CORE MAKING
R. V. Page
CLEANING
R. D. Madison
MACHINING
L. D. Babcock
ASSEMBLING
R. C. Sisco
SHIFT NO. 3
GENERAL FOREMAN
S. E. Sutton
MELTING
W. B. Harris
MOLDING
L. F. Wentworth
CORE MAKING
D. H. Young
CLEANING
C. E. Nesbit
MACHINING
E. J. Dose
ASSEMBLY
P. C. Holmes
SHIPPING
E. E. Woodrow
SHIFT NO. 1
E. P. Morrow
SHIFT NO. 2
E. E. Sisco
SHIFT NO. 3
G. J. Dosse
MASTER MECHANIC
E. J. Bingham
MAINTENANCE
P. O. Carter
PLANT PROTECTION
E. J. Cowan
STOREKEEPER
E. T. Carson
EMPLOYMENT SUPERVISOR
E. E. Blake
EMPLOYMENT
E. C. Hamilton
WELFARE
C. E. Elsy
REPORTS
A. L. Sisk
MANAGEMENT
MANUFACTURING
SERVICE

FIG. 7.

DIVISION SALES MANAGER—MINNEAPOLIS DIVISION

(Responsible to Vice-President in Charge of Sales)

Scope of Responsibility

Division Sales Manager at Minneapolis is responsible for procurement of customers' orders in accordance with sales quotas fixed by the Vice-President in Charge of Sales for:

1. Minneapolis Sales Division
2. Personal accounts
3. House accounts and prospects assigned

He will conform to regulations prescribed in the current Company Manual and to directions of the Vice-President in Charge of Sales.

Specific Responsibilities

1. Arrange for all contacts with customers and prospects within his division.

2. Develop and serve the special needs of customers. Sell types and kinds of products that can be manufactured on Company equipment at minimum cost. Secure assigned quota of sales distributed among seasonal industries thereby obtaining a level production curve. File weekly with Works Manager balanced production schedules for Minneapolis plant.

3. Sense changes in market requirements, thus enabling our Company always to lead in ability to serve.

4. Assign salesmen quotas, territories and accounts to secure complete coverage and maximum potential volume per man, and follow-up to see that each salesman sells his assigned quota. Review salesmen's quotas and territories frequently and change whenever necessary to obtain better balanced coverage.

5. Route salesmen to produce results at lowest sales costs. Maintain sales operating books up-to-date.

6. Obtain prices for products within pricing limitations authorized by Vice-President in Charge of Sales.

7. Show leadership in our industry through sound pricing policies.

8. Maintain procedures and records for Estimating and Order Entry as prescribed by Company Manual and directions of Vice-President in Charge of Sales.

9. Maintain stock of finished goods within authorized limits and in approved warehouses.

10. Satisfy customer complaints on all shipments out of Minneapolis.

11. Locate and interview prospective employes. Obtain approval from Vice-President in Charge of Sales before hiring. Keep Personnel Department informed of future needs for salesmen.

12. Develop among employes a thorough knowledge of the Corporation's history, policies and objectives, as well as the reasons therefor, with the purpose of producing close cooperation with all other departments and maximum service to our customers.

It must be remembered that delegation does not relieve the executive of his responsibilities; it merely entrusts them to a subordinate whom he, in turn, holds responsible. On the other hand, each subordinate executive to whom specific responsibilities have been delegated is free to act on his own initiative in discharging them, so long as he is conforming to whatever limits his superior has laid down. Other members of the organization should look to him, and not to his superior, for original action on matters which have been placed in his hands. If, on occasion, satisfactory action cannot be secured by dealing with a responsible subordinate executive, it is usually better for the dissatisfied individual to report the circumstances to his own superior and to abide by his advice as to going over the head of the man who is thought to be in the wrong.

Controlling Performance under Assigned Responsibilities

Need for Reports

Each executive who has delegated responsibilities to a subordinate executive must obtain frequent reports of the discharge of such delegated responsibilities. Periodical reports of financial progress are a prime essential because they measure results in the ultimate common denominator of dollars and cents. In addition, every executive must keep himself informed of what each of his subordinates thinks he is doing, and is planning to do, to make a success of his job. Orderly and systematic reporting is the only effective method for covering the ground. Moreover, the demand for such reports must stem from the top to draw them up from the bottom. For heads of divisions to be able to prepare their reports to the chief executive, they will require similar reports to themselves from their subordinates, and so on down the line. Certain responsibilities should be reviewed monthly, some quarterly, and others semi-annually. The most important thing to bear in mind in the preparation of these reports is the opportunity it offers to exhibit a justified pride in work well done and in intelligent planning for the future. An example of the practical application of this is given in the schedule

of subjects to be included in monthly reports to the President by the Vice-President in Charge of Sales, figure 8.

It should be noted that the four subjects which are reported on each month are covered by mere tabulated data. In contrast to this, each month there are scheduled two or three quarterly or semi-annual reports which require careful preparation. Certainly, it is not asking too much of any executive to insist that once each month he survey the present status and the future potentialities of two or three of his major problems. The company's welfare may be largely dependent upon his constant vigilance, good judgment, and energetic work in handling some of these matters. If, when such reports are reviewed, it appears that some specific responsibility is not being handled well, that fact should raise these questions.

(*a*) Is the responsible executive competent to produce the results that are expected from him?

(*b*) Has he able and sufficient assistance?

SCHEDULE OF SUBJECTS TO BE INCLUDED IN MONTHLY REPORTS TO PRESIDENT BY VICE-PRESIDENT—SALES DIVISION

	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1. Development of new accounts	x	x	x	x	x	x	x	x	x	x	x	x
2. Changes in sales territories and quotas	x	x	x	x	x	x	x	x	x	x	x	x
3. Changes in personnel of Sales Division	x	x	x	x	x	x	x	x	x	x	x	x
4. Changes in legal and other restrictions on orders		x			x			x			x	
5. Changes in relations among volume, prices and costs			x						x			
6. Changes in estimating procedures				x						x		
7. Changes in manual covering manufacturing specifications					x						x	
8. Customers' samples which produced orders			x			x			x			x
9. New Products under study by Research Engineer	x			x			x			x		
10. Changes in warehouse stocks of finished goods		x						x				
11. Customer complaints			x			x			x			x
12. Advertising and publicity programs	x			x			x			x		
13. Comparisons between quotas and actual sales	x	x	x	x	x	x	x	x	x	x	x	x

FIG. 8.

(*c*) Is he capable of delegating and supervising responsibilities that he cannot handle himself?

Answers to these questions will suggest what measures should be taken to bring about necessary improvements.

Management on the Principle of Exceptions

As an essential measure to enable executives to carry their responsibilities effectively, modern busi-

ness has developed what is called "Management on the principle of exceptions."

1. Standard practice rules are issued, outlining procedures under which usual and regularly recurring operations will be handled in a standardized way. Unusual situations are dealt with under special procedures designed by the responsible department head or other official to fit the individual needs of each case. Once rules are officially prescribed, it is satisfactory to leave their application to the routine of the business in the hands of the rank and file and thereby free executives of the organization to deal with unusual transactions and unusual conditions. This is why we have executives. Good practice permits minor executives to deal with special situations of smaller importance but requires them to seek advice from higher executives in matters of greater moment. The principle to be followed is this: it is the responsibility of the executive to set aside rules when they do not fit an individual case, as well as to enforce them when they do.

2. So far as practical, standards of accomplishment are prescribed to govern and measure the efficiency of individual performance at all levels in the line organization. Variations from such standards are reported periodically for the benefit of each individual concerned and his superior. Only when such variations exceed reasonable tolerances will results be criticized, and when variations show improvement over standard, appropriate recognition will be forthcoming. Internal audit of the correctness of such reports, as well as of comparisons between standard and actual performance will occur at regular intervals and, incidentally, will provide an opportunity for review and reconsideration of established standards.

The Instrument of Good Management Is Not "Authority"

Nowhere in this discussion does the word "authority" appear. The omission has been intentional. There are executives who feel they cannot command a following without a club in the hand. Others get results by persuasion; some of them even by ingratiation, wheedling; some by the overwhelming force of their intellectual domination. There are others, not concerned primarily with their own importance, to whom success comes through helping their subordinates do their own work better. These are God's own. They make the bread of life palatable by mixing it with the milk of human kindness, and the table is spread for all to eat.

Even so great a coach as Knute Rockne was content to stand aside while the Notre Dame team enjoyed the plaudits for their victories. To the audience, the players were the real heroes of the gridiron. Indeed in the final analysis, his contribution was not that he taught them to play football, but that he helped them to learn and inspired their effort to win.

How much better management we should have if every executive could realize that the highest reward which comes to a leader of men is pride in the accomplishments of his team, the gratification of knowing that his followers do not merely bow to his authority but recognize and depend upon the wisdom and skill of his guidance.

EDITORIAL NOTE: The author of this paper has urged upon the editors that he is mindful of the fact that there are legitimate differences of view about some of the principles and practices discussed in this paper. Both he and the editors will welcome critical statements which look to a clarifying of the issues here considered. O.T.

★ **MANAGEMENT IN TRANSITION**
Complete set of 13 papers delivered at the Annual Conference of the Society for the Advancement of Management, December 1–2, 1944 at the Waldorf-Astoria. Mimeographed, paper bound. Members, $1.00; Non-Members, $2.00. The Society for the Advancement of Management, 84 William Street, New York, 7, N. Y.

A Look Ahead for Management*

By S. H. THOMPSON

M. Am. Soc. C. E.

AS management looks into the future out of this cataclysmic present, it reminds me a little of David taking on Goliath. Goliath would be the huge and terrible complex of modern industrial and financial economics. They said unto David, "Thou art not able to go against this Phillistine to fight with him: for thou art but a youth, and he a man of war from his youth." But David slew Goliath with a single, well-placed stone.

I hope our problems of the next few years turn out to be that simple; but I wonder if we are not confronted with a Frankenstein monster of our own making, rather than a mere Goliath.

Management is a branch of technology, or in a broader sense embraces all technology. In the last century or so the development of technology, rising crescendo in the last 25 years and especially in the last 10 years, has changed the whole basis of our economic and political society. We do not fully realize this yet.

Two aspects of this are of special importance. First, it is not reversible. It is a one-way street; we cannot go back to the simple life, even if we would.

Second, this Frankenstein monster, if such it is, is so constructed that he will operate for one of two purposes, and only two. One of these is the satisfaction of human needs, of which we know technology is now entirely capable—not only human needs, but a comfortable fraction of human wants. The other is—recurrent total war.

Bigger and better wars are what technology has thus far in fact brought forth. Our modern industrial machine in a worldwide sense *is* "a man of war from his youth." If we want to divert him from this fatal path, then we will have to do a better job of management in directing him toward the other objective—the satisfaction of human wants.

Our Frankenstein—technology—has a peculiar and difficult characteristic. He insists on working. He is willing to do useful work at our bidding. But if we do *not* keep him busy at useful work, he then proceeds inexorably to do the most terrible mischief.

So far I have simply re-stated one view of the basis on which we all must do our thinking. But there *is* a new thing. It is a change in magnitudes—a change so great as to alter the conditions of the problem—a change which I have been trying to measure recently in my work for the National Planning Association.

Put as narrowly as possible, it appears that *if* we are to use our productive capacity for goods and services after the war, we must find the way to increase the consumer purchases (i.e. the standard of living) of the American people by 50 percent over any prewar year. Probably we have to increase the standard of the lower half by 100 percent if we are to get the necessary volume of effective purchasing power at the cash register. The issue cannot be dodged because our war production record has shown the people that there is no physical reason why it cannot be done.

Technological proficiency has outrun the distribution of its fruits so far that we have almost a generation of progress to make up in satisfying the wants of our people.

If this is not a sufficient challenge to our will and our wit, then it should be noted that the problem really embraces the whole world and all or most of the human race. And as one contemplates the *political* history of the last 15 or 20 years it is hard to escape the feeling that we had better solve this problem in management promptly—if we can.

Why is this a problem of management?

It is a problem of management because in order to raise consumer purchases by anything like 50 percent, we will have to change the wage structure of industry. We will have to increase the *relative* share of the total real income that goes to the lower two-thirds or three-quarters of the income scale—*without* changing prices proportionately. If these people do not get increased wages so that they can buy more, then we will have to find some way of getting the goods and services bought for them anyway, for example through services by government.

Such changes are required if there are to be buyers for the output of our peacetime economy. There *must* be buyers if there are to be useful jobs for substantially all those able and willing to work.

It is not quite true that changing the wage structure to increase the effective purchasing demand of the lower-income brackets is the only way to make our

* Conference on the Teaching of Management, Washington, D. C., February 1, 1945. Statement by S. H. Thompson, M. Am. Soc. C. E., intended as a basis for discussion.

economy function satisfactorily. There are two other alternatives. One is for business to provide the necessary expenditures by exporting large quantities of capital, or by building monuments to itself in this country. (Productive capacity, beyond that justified by purchasing power for the product, would be a monument). The second is for government to spend the extra money. Each of these would pose a whole set of additional problems. We may have to adopt one of these other alternatives or some combination of the three; but if so, it will be because we have failed (perhaps temporarily) on the first. It will be because we have failed to find the way to distribute the potential products of this industrial civilization to the potential users of those products.

If we succeed in solving the problem tolerably (without doing violence to past institutional arrangements) we will be exercising our function of management in an economy so much larger than before that our task will be different in kind—not simply in magnitude.

If we solve this problem we will have faced among other things the riddle of value. We will have realized that the question of whether the lower half deserves more money or not is beside the point. We do not know, cannot measure, what they deserve.

If we do succeed in defining how much they deserve, and it falls short of the purchasing power that the system requires, we will then have the task of changing the arrangements so that workers can deserve or "earn" the incomes that we know the system needs. This, too, is a part of the challenge to management.

At present we do not know what a "fair" wage is, or a fair price, nor how to define either of them. I know of only two rational bases for price or wage: cost, and value. We have no way to measure either the cost *or* the value of human labor to the human race.

We know what the *price* is. In theory, a fair price for labor or for an automobile is whatever the laborer or the manufacturer can get, by whatever means of negotiation or compulsion are open to him or are tolerated by the rest of us. But apparently this is not satisfactory—in the light of the advances already made by technology and management and the advances we can plainly see ahead if we look around the laboratories and the drafting boards and inspect the records of the more progressive companies.

Where then does this leave management and the teaching of management?

If we really are serious about preserving our past institutional arrangements, it leaves us in the position of having first, to produce greatly more than we have in the past in order to use our potentiality—in order to keep our Frankenstein out of mischief; and second, to find ways to get that enormous volume of production bought, regardless of our preconceived ideas. The first is simple; the second is not.

If we do this job, it will be because we have discovered and taught individuals and companies, groups and industries how to operate in the larger framework. This means making them conscious of natural and national economics. It means teaching them how to select or modify their objectives so that they won't conflict, but instead will harmonize with the general or total objectives. This will be difficult; because, where the individual interest is not the same as the total interest, one or the other has to change.

The task of teaching is to teach understanding. There is a new set of things to understand and they are not merely in the future—they are accomplished facts. If we can find out how to grasp these things ourselves, then perhaps we can teach them to the next generation—a generation which, I think, is not going to be too patient with us.

To recapitulate:

1. Technology has confronted us with a revolutionary change in the basis of our economic and political thinking. It is a fact and not a theory. It has already happened even if we don't realize it yet. And more is still to come.

2. Management perforce must adjust its economic and business concepts to the realities of this technological revolution. We must do this if we seek survival. The fact that it is difficult is one of the conditions of the problem.

3. Teachers of managers and of management must realize these things, must adjust and enlarge their concepts to these events and the onrushing future. And then we must convey this understanding, as best we can, to those who crowd upon our trail—to the oncoming generation of managers, war-tried and tough, impatient, impetuous, demanding—a generation that will, I think, insist on action.

Maxims of Management

By OSWALD KNAUTH*

I

THE art of good management is to create an organization which will develop to its highest point the intitiative of individuals, consistent with an orderly process and cohesiveness of purpose.

Management is an art, not a science. Hence its forms express the personality and color of one man: the chief. Through his choices, his example, and his instructions, the chief creates an extension of himself throughout the organization. From this it follows that there is no single, royal road to building a good organization. Each organization must be built to the specific purpose in hand, and its form is dependent on the ability and characteristics of the persons who compose it.

Take the question of whether the chief should dominate and supervise every detail. That depends partly on his own character, and partly on the ability of the immediate lieutenants. It is best if the chief can free himself from daily routine, and spend his time scanning for improvements and in supervising. And yet, there is such a thing as getting so far out of touch with the daily occurrences that judgments become abstract. Every chief must devise his own methods of keeping his feet on the ground. But this should be possible without undertaking too many burdensome details.

It has been said that General Robert E. Lee left too much latitude to his lieutenants. On several occasions, his plans were upset through an unexpected interpretation of his orders. If this was so, then it means that he had the faults of his virtues, for on other occasions the relative independence of his lieutenants reaped great results.

One corporation head makes a point of never visiting his plants, lest his judgment of their performance be warped. Another rejoices in the fact that he is everywhere called by his first name, and regrets that his organization is so large that he sometimes slips into confusing the names of his employes. A third makes a policy of harassment, so that everyone is being constantly reported on by other sets of inspectors. Yet they all are outstandingly successful.

Should there be a single "number two" man, or should there be a group of equally important and trusted executives at the next level of authority? Should the "number one" be a lonely figure, or should he be the leader of an equal group, "primus inter pares"? These are not questions of good or bad; they are matters of personality. Many solutions can work with good results if the personality factors are allowed to have effective play.

Promotions from within are a favorite way of stimulating the members of an organization to do better work in the hope of achieving advancement. And there is much to be said for this. Within broad limits it is a wise policy. Most certainly, the opposite case, when high positions are invariably filled from the outside, leads the stalwart second line executives to look elsewhere for opportunity. The able men within the organization will drift away, occasioning a double loss of ability and continuity. And it is risky to lure a good man from an outside position he already holds without the long acquaintance that engenders confidence. He may prove to be one of those who was carried along by his organization, rather than the creative type who made it what it was.

It is ten times more difficult to find and appoint an outsider to an important position than to promote an insider. The chance of his not fitting into the organization and of the organization sabotaging him are ever present; real and disastrous. The outsider constitutes a threat to the security of all officials with whom he comes in contact. If he is brought in as president, then the lieutenants have no choice but to adjust themselves to the new chief. But if he is brought in as a lieutenant, with a reputation for cutting a wide swathe, without the enthusiastic support of the other lieutenants, then the safest policy for them will inevitably be to gang up and isolate him. It will take a great determination on the part of the chief to see him through his troubles. The obvious solution is promotion from within. But the obvious rarely strengthens an organization. The slide into mediocrity followed by slow decay may well be made easier by promotion from within.

To take a more restricted example of the same principle: it rarely happens that the logical successor is the best successor. A vice president is rarely a good

* Formerly Treasurer, R. H. Macy & Company; formerly President, Associated Dry Goods Company.

president; an assistant manager is rarely a good manager. The qualities that make one are not the qualities that make the other. To promote a man either because he "deserves" it or to give him an "opportunity" is frequently a mistake. President Taft, by long service and training, was the logical successor to President Roosevelt. Judged by experience President Hoover and President John Quincy Adams brought to the office a broader background than almost any other President. Yet none of them were outstanding. Many similar cases in industry will come to mind. And it is usual among college presidents. Perhaps, it is most frequent in politics where some deserving "lame duck" must be found an administrative post, for the good of the party machine. Here the results are almost uniformly disastrous.

But when it does happen that the logical successor turns out to be a man of ability, the results are astonishing. For it means that over two generations an organization has been guided by a singleness of purpose. Take the case of the Los Angeles Times, founded by General Harrison Gray Otis and continued by his son-in-law, Harry Chandler, the two together wielding sway for 70 years. Again, consider R. H. Macy & Company acquired by Isidor and Nathan Straus in 1888 and inherited by three exceptionally able sons of the former, whose management did not come to an end until after 1930, a period of almost 50 years with no change of policy.

In recent years, outside developments have necessitated a modification of many policies.

The late Colonel Malcolm C. Rorty had a principle which he frequently expounded under the title of the "Rule of Three." In practice, it will be found to work.

The rule is as follows: Whenever an important position is to be filled, search must be continued among the possible candidates until three have been located, any one of whom is considered able to fulfill the duties involved. The danger to be avoided is that management should give up its search after only one has been located, who appears to have the necessary ability, at the salary involved. This point is often reached, after many fruitless interviews, until exhaustion and the necessity of an early appointment lead to a decision. When this happens, and it does frequently, then the one selected will almost invariably be found wanting.

The remedy is that the sights should be raised. If, for instance, a $5000 salary is not sufficient to attract three able men to the vacant post, then a $7500 salary should be offered. Management has underestimated the calibre of man needed. Such errors of judgment are particularly made when a position has been held for a long time by a trusted but stupid "old timer," who has never even imagined the possibilities of development involved. This "old timer" has understood the workings of the organization sufficiently to keep out of trouble, but has never contributed anything beyond this. A low standard has, therefore, come to be accepted, until a change has forced a new judgment.

It is impossible for a "number two" man to rise above the standards set by the chief. If the chief is mediocre, the whole organization is mediocre. Any man of ability who happened to drift in would be out of tune and would shortly leave. Even if he remained, he would be unable to enforce his standards on his immediate subordinates, for they would quickly detect the fact that they were being subjected to cruel and unusual punishment in relation to the rest of the organization. His demands and his suggestions find no favor among his associates, and the chief does not back him up. In important matters he must consult his chief and abide by his decisions.

It has been tried times without number to save a faithful, popular but inadequate manager by forcing on him a superior assistant. The record is 100 per cent failure. The typical case is when good old Miss Brown, whose methods of meticulousness and faithfulness achieved a certain degree of success under less trying circumstances, is discovered to have been carried by the rest of the organization. She is in that hazy zone of not being good enough to contribute to the general success, but perfectly capable of carrying on her job in routine fashion. More is demanded of her than she can deliver, for she cannot change her ways and has fallen behind the procession. Besides, the records show that she is making money for the organization. In addition, she is so nice, and has become an institution. And yet she stands in the way of progress, hampering development of all the phases of the organization with which she comes in contact.

It is a difficult situation for the management. The organization would be shocked to learn that she has been displaced. So a bright, energetic, promising young Mr. Jones is found and finally she is persuaded to accept him. Indeed, she takes him to her bosom and attempts to train him. But he has been selected for the specific reason of correcting her shortcomings. What a tragedy! Nothing but failure can ensue. What else can management do? There is only one thing—take the bull by the horns. Perhaps it can be

accomplished with a minimum of shock—like finding her a new and innocuous post, full of honor and yet a sinecure. Failing that, a disproportionately large pension may save the day. This will send her out chanting praises, rather than telling everyone of the mean and heartless treatment which has fallen to her lot.

Pensions play a large and strategic part in good management, not so much for decent respect for the long service which they indicate, as for their effect on the organization. The keen efficiency expert would call them a waste of money, but the wise manager knows that they lubricate the wheels. It is no matter of chance that union membership is sought most eagerly by the older members of the organization. Unless this attitude is comprehended, it is always a shock to management to find among its leading and militant unionists a group of old timers, who never did contribute much, but who were kept on in some sort of a cleaning or checking job simply because they were faithful and had established the claim of years. In fact, it is pathetic that these semi-charity cases should seek the security of unionism, when they have always been tolerated, rather than advanced.

Management is better in its acts and intentions than in the salesmanship of its virtues. Youth has confidence in its own ability to weather a change, but middle age sees old age creeping on and cherishes security. A formal pension system is apt to be inadequate, and a reputation for generosity is among the best investments that a management can make. Pensions are important to the past members of the organization, but they are vital to the future of the present organization in terms of confidence, loyalty and security. Which is an aspect generally overlooked.

Every organization must be built around a specific purpose. When the purpose changes, the organization must be changed, almost from top to bottom. Attempts at adaptation lead to a confused muddle.

This happens frequently in newspapers when the new editor changes the point of view drastically. When the New York Evening Post was sold by O. G. Villard to a syndicate, the exodus of staff was dramatic. Yet the syndicate was sympathetic with the general purposes of the predecessors. When again it was sold, this time to the Curtis Publishing Company, that venture proved a failure, though its general ambitions were roughly similar to those of the past. When again the Evening Post changed ownership, the objectives were changed. It was re-named "The Post" and converted into a spicy sheet of scandals and issues. Again the turnover was complete. As far as can be discovered, only one member of the editorial staff survived the shock, and was able to adjust himself.

Some years ago Lord and Taylor was transformed from a worthy, promotional enterprise into a high style, nonpromotional store. Out of the top fifty executives, only twenty could adapt themselves. It was not that they did not try, or that they did not have ability. It was rather that they had been selected for one set of qualities, and suddenly found that other qualities were demanded by the new management.

Sometimes you will hear a new manager, after taking over a rundown enterprise, boast that he did not replace a single one of the members of the organization that he found; he merely gave them new guidance. It is a false boast. When this is analyzed closely, it is found that he did not make any important change of policy. He was skating along, trusting to luck.

A certain degree of overorganization is necessary. Temporarily, things run best when each member has his place, and has his work so laid out that he is busy from opening to closing. But this cannot last long. An extra effort may tide over one crisis, but it cannot tide over a succession of crises. There must be some resilience, so that it comes about that the desirable degree of overorganization is among the most difficult problems of management. It is analogous to carrying spare parts in an automobile on a trip through the desert. Just which parts? Too many would overload the car. Inability to fix a breakdown would be fatal.

Management must ever be ready to make a new layout that will work. So much of the value of every person is local to the organization he is in that it is not possible to trust to finding a replacement at just the right moment. All of this causes extra expense and friction, but it is just part of the scheme of things.

In a sense, overorganization is self-limiting. When there are too many spare people preparing themselves and waiting, opportunities do not develop fast enough to hold them. One after another is picked up by a competitor after he has been trained and carried. The extent of carrying unused ability requires nice judgment and careful thought.

II

The preceding maxims have been of a positive character. They are difficult to appraise, for there is frequently a wide choice of methods, any of which is good under the given conditions of personality and objective. The maxims which follow, are negative, in the sense that they are errors frequently made and are

always wrong. These errors are comparatively easy to recognize, but difficult to avoid.

The most usual fault is an overlapping of functions. This arises from a lack of clarity on the part of the chief in outlining limits. And it is a natural error to fall into, for there is always a hazy area between two departments or sections that cannot be too clearly defined. The constant urge of every subordinate executive to extend his field of importance must be constantly checked and held in line. This urge is even stronger in government than it is in business, though it is fundamentally the same phenomenon.

The standard reason for overlapping is that the constituted department is falling down in its share of the work, and that some other segment of the organization must either suffer or undertake the job itself. There may well be an element of truth in this connection, but the remedy is not duplication. It is a re-organization of the segment that is falling down. It is comparatively easy to point out this type of error, but in practice difficult to avoid. Reasons of expediency, force of personality and desire to avoid open conflict all unite in permitting the overlap. These forces are at their maximum in government service, for minor executives count their importance, not in their rate of salary, but in the number of their underlings. Moreover, there is no balance sheet to hold the chief in line. Bureaucrats may complain of the difficulty of extracting funds from Congress; but any man or group of men is a soft-hearted taskmaster in comparison with a balance sheet, which is completely impervious to rhetoric or explanation. Overlapping of functions is not a one-time fault; it keeps creeping in and requires continual elimination.

It sometimes happens that two important men in an organization so greatly dislike each other that they do not speak. Any business they have together is accomplished by letters. A case comes to mind of two men who occupied adjoining offices, but who never discussed matters face to face. The volume of correspondence that went back and forth grew to astounding proportions. Each was building up the record.

When this impedes operation, it must be dealt with by the chief. It cannot be permitted to continue. There are three possible solutions: both must leave; one or the other must be selected to remain; or they both agree to overcome their feelings in their internal relations. Dr. Johnson of the Home for Feebleminded in New Jersey developed a standard method to meet this situation by calling both men into his office, putting the choices before them and leaving them together for one hour to attempt to reach a decision. If they were unable to agree on the last alternative, he reserved the right to select one or other of the two. Any solution is better than none; yet of course the third choice is the most constructive. It is bad management to allow personal feeling to preclude internal cooperation.

The repeated appointment of mediocrity to positions requiring judgment and initiative heralds the breakdown of any organization. Mediocrity predominantly characterizes most people, and thus most of the people in every organization. They are able to carry on; they are adequate to perform the daily task in hand; but they still are not constructive. Some small number, through their technical knowledge, their loyalty and their length of service, may be permitted to rise to positions of some limited power; but not too many. The dominance of mediocre adequacy means disintegration, for every organization is either on the upgrade or downgrade. It never remains on a level.

President Eliot of Harvard is credited with having laid down the principle that he never appointed a professor who was good enough. There were plenty of them, and a certain portion of those who had the early promise of exceptional ability slid into this category. The result of this policy, adhered to for thirty five years, produced remarkable results. The Army only permits seniority to rule up to the rank of colonel; thereafter selection is fiercely competitive, and many adequate colonels fail to cross the great divide between a staff officer and a general officer.

Failure to weed out the unfit is a corollary to the appointment of mediocrity. This is one of the most obvious marks of bad management, and among the most common. For change in the important parts of the organization by the chief requires that he fly in the face of tradition, stability, loyalty, and friendship, which are also vital aspects of any organization. It is a gruelling task; yet it is the test of good organization.

Among the most common faults of management is the use of the same report for operation and for statistical purposes. It is reported, for instance, that 20 machines were turned out last week when 40 were expected. As an operational report, it obviously means that something must be done to speed up the production of those particular machines. That calls for a study of the reasons for the shortage and pressure to correct the cause. But if the report is also used for a public or private "bawling out," then future reports will be so doctored as to conceal any shortcomings.

Take, for instance, the practice of listing requests by customers for items which are not carried, in use

by most large mercantile establishments. It is most valuable for indicating new trends of popular demand and is closely watched, especially in fashion fields. Yet in many cases, these reports go also to the chief, who thereupon berates his subordinates for not carrying those particular items. The natural result is that the subordinate sees to it that such reports are discouraged. What is not known evokes no criticism.

Another establishment demanded of each branch a forecast of its monthly production—and then judged the branch by its ability to live up to its own forecast! Naturally, the forecasts came to contain more and more allowances for slips, so that they were inevitably lived up to and exceeded. The reports became valueless for either statistical or operational purposes.

This is the wrong method. The chief must establish standards of his own to discover whether his aides are on the job. This requires ingenuity, and it is laziness on his part to seek some easy solution.

Petty annoyances are rife in every organization. They must be, for it is a strain on individual independence to adapt itself to the routines and necessities demanded by regimentation. Some of these annoyances cannot be removed, but they can be mitigated. The great act of subordinating one's own freedom to the necessities of routine can be overcome by almost everyone. The logic is so clear that it can be mentally accepted. But the small irritations which are permitted to persist wear out tempers and loyalties.

Standing in line, useless tyrannies from the minor bosses, questions indicating doubts of honesty, poor lighting conditions, uncomfortable chairs, draughts, all of these are the result of carelessness on the part of management and cause unnecessary resentment. There are many ways open to discover that they exist, and ingenuity will cure them all. If permitted to continue, the loss of efficiency is great.

An anonymous complaint box is the most obvious form of discovering irritations. The trouble with this is that when the complaint is not corrected, a cynical attitude will grow in the employe. Departmental sponsors, selected by employes or chosen from above; independent unions; and finally the representative of a labor union, are all methods of bringing these annoyances to light. All of these, however, are makeshifts; they correct the faults too late. Loyalty has already been bruised. The only real solution is an intuitive and alert management.

III

Good management is always difficult to achieve. Every organization has its roots in the past, its problems of the moment, and its preparation for the future as its conditioning elements. Management thus must consider many aspects in arriving at its decisions. Equally, no management can be appraised without full knowledge of its objectives and methods.

It is obvious, then, that the difficulties are not great in a small, temporary organization; and that they increase with size, permanence and complexity of purpose. They are at their peak in government organization. The armed forces are unique in their singleness of purpose; but the T.V.A., the R.F.C., the R.E.A. and others have many aspects in mind which affect their decisions. Their personnel is gathered from a variety of sources; they deal with antagonistic elements; and their controlling group is not homogeneous. The occasional bouts with congressional committees and the Bureau of the Budget are irritating, rather than constructive. In many cases, managers are not selected for their ability to master a complex situation, but for their availability on grounds of expediency. The restraints which operate in competitive organizations are lacking.

It would seem that the handicaps in Government management are so great that only a limited degree of excellence is possible of attainment.

TREDERICK W. TAYLOR

The founding of the science of Management. The life story of the Father of Scientific Management. A biography by Frank Barkley Copley. A treasure for your library. An ideal gift. Two volumes, $15.00. The Society for the Advancement of Management, 84 William St., New York 7, N. Y.

Better Wage Incentives

By PHIL CARROLL, JR.
Registered Professional Engineer

Eastern Regional Vice-President, The Society for the Advancement of Management, Author of "Timestudy for Cost Control," and "Timestudy Fundamentals for Foremen"

DURING this war, we have read about and listened to more discussion of incentives than ever before. The urgency for war production has emphasized the need for specific incentives. Patriotism has not been enough, although it is one of the strongest forces that moves us to action.

Patriotism is one of those incentives we class as non-financial. In that respect, it is similar to ambition, recognition, prestige, and a host of other qualities which induce us to do the things considered necessary to accomplish desired ends. Many of these non-financial incentives are more powerful and more constructive than those we call financial incentives. They are not to be set aside as unimportant in comparison with those which have the "dollar sign" on them. The difference lies chiefly in the lack of direct measurement of cause and effect.

More Money

Ordinarily, we think of dollars when someone says incentive. We immediately picture some added wage, or probably, the things which more money will buy. And right here, it should be pointed out that the satisfaction of desires is probably more correctly classified as being of the non-financial type of incentive even though it may be brought about only through increased earnings. For example, we say that a man lacks ambition who will work only long enough to get sufficient money to buy the necessities. We had many cases of this on the railroad when men would ship out to the job, work a few days and drift away. The same attitude is seen in stories told by engineers who work in certain foreign countries where, we are told, the days worked are inversely proportional to the pay. We have seen instances of similar conditions in some cases of absenteeism during this war.

The "almighty dollar" is not the only consideration. Moreover, apparently, the attractiveness of the dollar loses some of its glitter after a certain number are gained. By the way, this same diminishing incentive exists in reverse in the investment field. There the taxing away of profits destroys the incentive to invest in new businesses. The result may be more unemployment when we are again working to build instead of destroy. The obvious fact is that while the profit is not worthwhile money will not be risked in new business. Too much effort in the form of worry is required for the rate of return. Here again, we have factors involving attitude on the one hand, and on the other, measurement in terms of some tangible gains.

It is difficult to correctly weigh relative values when comparing tangible with unmeasurable gains. The comparison involves two opinions. Of course, one is the estimate of that which seems to be the more desirable choice of two possibilities. The other "guesstimate" is of the worth of the intangible and this may be influenced by prejudice.

Traditional Opposition

Certainly it is dependent upon the extent of the factual knowledge held by the one making the decision. One important example is that of certain union attitudes toward wage incentives. Some unions are traditionally opposed to wage incentives. And we should emphasize the tradition part of the attitude. It is the unthinking, blind following of the notion that jobs could be protected by restricting production. That monopolistic attitude can bring about a temporary "scarcity" of jobs and thus lengthen the employment of those in the closed corporation. But monopolies are formed primarily to hold up prices. This objective is the very thing which defeats its long time realization. The high price invites competition. In the case of the high wage it is some substitute material, equipment, product or whatnot that will reduce the high cost because the consumer insists upon getting more for his money.

There is no denying that some foundation existed for this opposition. Some grew out of the natural resistance to and resentment of "rate cutting" practices. The recurrence of that very thing has been my chief concern about the tremendous haste with which many incentive plans have been started during this war.

However, the opposition is fairly directed against only the malpractices of administration and time-

study, not the principle of incentive itself. Moreover, it is misguided stubbornness which persists in holding an attitude against those faulty practices which have largely disappeared. Maintaining an unswerving "No" toward incentive is at about the same intellectual level as refusing to drive an automobile because the one spare tire allowed by the government may not be enough protection against a long walk.

Progressive Thinking

Fortunately, some unions are gradually abandoning the policy of "more and more money for less and less work." Some are thinking progressively. They can see that to maintain and to improve our standard of living, it is necessary to produce more effectively. This is pointed out, for example, by Edward T. Cheyfitz, a national member of the C.I.O.'s Reconversion Committee in his article "More For Less" in the December 1944 Fortune magazine:

> "Progress and high productivity will be synonymous in our postwar society. Apply this to labor's job, and it resolves itself into a positive stand by labor for "no shackles on production." . . . "Pegging" production is equivalent to "plowing under." Holding back suggestions for improved production is the same as monopolistic holdback of new inventions and methods. . . . Labor, of course, can refuse to follow this road of support of industrial efficiency. I believe such action would be disastrous for labor as well as the nation."

"Making the job last" by "stretching out" the time taken to produce each piece is one way to maintain the size of the pay envelope. But that method makes for high cost and hence a lower standard of living. Producing more effectively by "making every minute count," on the other hand, tends toward lower costs and a higher standard of living. Even if the volume of work to be done were such that the man could make his day's pay in six hours and go home, he would be better off in the long run than if he were to "stretch out" the job to make it last eight hours.

Rising Costs

Getting the same pay for fewer hours of work is economically possible with the effective use of good wage incentive. And while all of us hope for an industrial activity which will keep everybody busy all the time, it seems to be self-evident that unless costs are competitive with foreign products, there will be a shortened work week to consider. Costs have gone up, up, UP in this war period when MNO (money no object) has been the too prevalent attitude. They will go up further if the present "take home" is maintained when the hours worked go back to normal, and still further when the white collar worker gets the same considerations which have been given to the employes who work directly on the product.

The tendency toward inflation of costs has been somewhat offset by the introduction of wage incentives in many plants during this war. In fact, some plants may have effected labor cost reductions. That, we cannot be too certain of, generally speaking, because so many of the plans introduced have paid over-all incentive earnings for increases in production from output quantities which had been previously depressed by all the inefficiencies of war expansions. However, when a relationship can be maintained between payments and output as it must be in all sales transactions, then costs are more stable. Whether they are low enough to permit the company to stay in business is another matter.

Payment by Results

Wage incentives make their most important contribution right in this area. They pay for results and, in general, establish labor cost as a relatively constant part of sales price. Moreover, they provide the opportunity for those to earn more who are willing to work more. That is as it should be because, while all of us hope at some time or other to get something for nothing, any excess payments to some have to come out of that going to the remainder.

Variations in earnings permitted by wage incentives provide the means whereby differences in capabilities can be properly rewarded. Such is not the case under a "day work" system where those assigned to a type of work get a certain base rate regardless of output or ability. True, some "day work" systems erroneously provide a range in rates but the "top rates" usually go to those who have stayed the longest and this is not necessarily any indication of their contributions to the output.

Timestudy Development

Incentive as a force which moves us to do more and better work is basically sound. It has been with us always and will continue to have an important effect upon the successes of individuals and businesses. It was with us long before modern industrial management was developed; so was piece work, incidentally, because there is evidence to prove that it was in use in pre-biblical times.

Wage incentive became an integral part of what is now called "scientific management" as a result of the development of timestudy. That came about because

timestudy permitted a fairer determination of the time required to perform work. And, because it has been going through its own process of development, like everything else which has been invented, it has been through the ups and downs of exploitation and disrepute. Also, like many another development, it has been grabbed for like a patent-medicine as a cure-all for every sort of industrial and business stomach-ache.

Nevertheless, wage incentives based upon timestudy are economically and psychologically sound. They do provide the means by which the producer gets paid in relation to what in the over-all picture he will have to pay out as the ultimate consumer.

Timestudy Mistakes

Many industrial sins have been committed in the name of timestudy largely through ignorance. Probably, the majority of self-styled timestudy men today are making numerous mistakes in their technical work by continuing to use averages of actual times and thereby creating inconsistencies in earning opportunities at the outset. They make numerous other mistakes in failing to understandably explain their efforts and the necessity for them. Some of the mistakes attributed to timestudy men are the fault of management's mistakes. Only last week a timestudy man spoke of being criticized because incentive earnings seemed to be headed sky-ward, when as he explained, he permitted himself to be forced by management to set up the incentive plan in a couple of weeks. Sure this is on war production, but we hope that both company and workers will be with us after the armistice. And unfortunately, the earned rate problems will not solve themselves. Consequently, another management will eventually be accused of "rate cutting."

Even so, we have progressed beyond the witch doctor age when we would have cut off an arm because it pained us. We have not abandoned automobiles because we kill more people with them than with implements of war. We should not condemn incentives and timestudy because they have been misused in some plants. We should not abandon efficient methods because more men could be used to build roads with teaspoons than would be kept busy with steam shovels.

Understandings Needed

What is needed is a better understanding of the enormous contribution that incentive, and its counterpart timestudy, can make to our kind of life. Management needs to understand that it must pay a high price by way of hard work in the proper installation and administration of good incentive in return for the benefits which it derives from it. And labor needs to understand that it has no right to expect more for its efforts without producing more and the increased productivity should be measured on a factual basis.

Management needs to understand the importance of properly setting wage incentive standards and maintaining their consistency with effort throughout all changes in work requirement. In addition, it must recognize the magnificent contributions to progressive manufacturing developments that can come from a Suggestion System that works. Here we can take a lesson from Lincoln Electric of Cleveland.

Labor needs to understand how effectively it retards its own economic progress by restricting output to stay within the "top limits" and fighting every change in standard time. Even the union stewards will eventually recognize that every time they succeed in "holding the line," when management is too fearful of disturbance to insist, they have created one more inconsistency in earnings and perhaps another pegged production. Also, the keeping under cover of improved methods so as to make the loafing time greater is restraining the growth of the amount to be divided. Here again we could take a lesson from Lincoln Electric.

Timestudy Training

Obviously, some part of both lacks of understanding could be remedied by education. Some improvements would result, for instance, by introducing more joint training of foremen, timestudy men and union members in the fundamentals of good timestudy. This would help by creating a mutual understanding of the whys and wherefores. More knowledge of basic fundamentals of correct timestudy procedures would eliminate many arguments. Timestudy is at the base of most incentive grievances and is misunderstood largely because too little effort has been made to explain it. The "before and after" points of view resulting from training are clearly indicated in another part of the Fortune article previously quoted. The quoted conversation took place between a worker who had requested a check study and a timestudy trained steward chosen by the union because he was "generally known as a tough negotiator."

"Shortly after the training program had been completed, it was only natural that one of the workers in the plant who had a timestudy complaint ask that Ted, our tough steward, be brought out to the job. Ted, now a timestudy representative,

studied the job carefully, and spent the better part of the day observing the pace and motions of the worker. At the end of that time, the worker turned eagerly and said, "The Company is cheating me. Right?"

Stewart Ted said, "You are wrong. You have been given a fair timestudy and a fair rate on this job."

"The worker looked at Ted, and with a bitter note in his voice shouted, "You were better when you were ignorant."

The foregoing portrays the frequent reversal in point of view that results from proper training. Unfortunately too, the representative is often accused of "selling the union down the river." After he has been trained, the same thing often happens with the representatives who participate in job evaluations. And when asked what is to be done to overcome this situation I say, "Train another group; eventually all will be trained and the arguments eliminated."

Experience has proved that a better understanding will result from a training in the basic principles. This seems to be a necessary adjunct to an equitable solution of timestudy problems. Besides, the training will continue to pay dividends whether the trained men advance in union responsibilities or step up into management through foremanship.

And, the quotation names the most important derivative to be gained through training. The acquisition of skill to correctly judge the "pace" of performing work will do more to remove mystery from timestudy than all other technical details learned. Without that skill, the rest is almost meaningless.

Union Participation

At the same time, it is not to be assumed that union trained timestudy men should act jointly with the duly constituted standards setters. That would presuppose the determination of incentive standards through negotiation or compromise. Such a procedure is wrong.

The establishment of fair standards is basically an engineering process. It results from facts. The answer is right or wrong according to the interpretation of the work necessary to complete the operation. There can be no juggling of standard times to substitute for base rate adjustment that will not ultimately result in a condemnation of the incentive plan as a whole.

The right minded timestudy man insists upon setting standards which are equally fair to both workers and company. His reputation is often that of company-sided, however, because he makes every attempt to reduce standards to correspond with operation improvements. But the desire to meticulously follow the middle of the road course is nothing more than an engineers method of sticking to the facts. That is what the timestudy trained steward does also if he thinks, instead of giving vent to his emotions.

Improved Procedures

Naturally, some plants would have to change certain of their practices in the process of exposing them to open discussion. But that should be a constructive action because many procedures now dignified by the term timestudy are far from correct or sound. Constructively again, timestudy procedures would have to be stabilized and remain consistent after they were thoroughly explained in training programs.

More training will cost more money, of course. Some may add that they are afraid to train too many "sharp shooters." However, that seems to be one of the ways to keep wage incentives and make them more effective. And, that we must do, it seems to me, if we are to compete successfully with all the nations we have equipped and trained to manufacture by American methods. Costs must be brought down and down to stay in the market. Costs will have to be trimmed and further reduced if we add on to wages the war time bonuses for night work and overtime. Costs will have to be lowered more than enough to offset the annual wage guarantees and increased social securities that we hear so much about.

Wage incentives offer partial solutions to all these problems of more and more money for less and less work, because they pay for productivity. The amount of the wage is relatively unimportant so long as the cost goes down instead of up. So it would seem vital to American industry to find the ways to make wage incentives work more satisfactorily and more extensively. They should be extended to all functions of the business to avoid the complaints of discrimination and to gain the proper rewards for measured contributions. This presupposes a proper use of sound timestudy principles and a broad guaged understanding of the whole procedure. When those conditions can be made realities, we will have less to fear from unemployment caused by those who can deliver the goods for less than we can make them.

Application of Burden in Unit Costs[1]

By H. P. DUTTON

Chairman, Department of Industrial Engineering, Illinois Institute of Technology, Consultant in Management

SOME excellent work has been done in recent years on the tracing of the relationship between costs and their causes. Budgeting of expense became practicable when John Williams and J. M. Clark[2] showed how to separate the fixed and proportional elements in expense. In market analysis and other cost analyses it is now possible to trace with a fair degree of precision such relationships as that between size of order and unit cost, to establish, for example, minimum profitable selling limits based on firm size, territorial density or like factors.

In finding the cost of a unit of product, however, general practices have changed little since the days when overhead was a relatively insignificant item. I used to have a foreman who, year in, year out, added 10% to labor for overhead. Today, overheads on the order of 200% and up are common. The tail wags the dog. It is time to examine the premises on which the costing of a product is based.

The common method of allocating overhead expense to unit costs is to select some figure which is presumed to vary closely with volume of output, such as direct labor hours or cost, and to work out a ratio such that, if each hour or dollar of the unit, (as labor) carries its proportional expense, the indirect expense during a normal period will all be absorbed and appropriately divided among the products. Direct expenses customarily include direct labor and direct materials; indirect expenses or overhead or burden include all other manufacturing expenses.

A variant of these systems is the production center plan. Here, the expenses for a single machine or production center, plus a share of the general and un-allocable expense, are separately applied, as a rate per hour, to each hour of work done on the product by the center.

All of these systems suffer from a mathematical fallacy; they treat indirect expenses, which are ordinarily for the most part fixed, as if they varied with volume. Since this treatment leaves burden unapplied in months below normal volume, reserves for volume variance are usually set up in the expectation that under-application in one period will be offset by over-application in another. But it is better accounting practice to show a profit or loss when it occurs, than to cover it up or carry it forward.

These plans of burden distribution do allocate all manufacturing costs to the product and, to that extent, do give a true historical cost. But while overall accuracy can be obtained, we have no assurance of the accuracy of the division of the costs among products.

It is commonly assumed that supervision, rent and other major manufacturing expenses are as closely related to labor as to any other available base for expense application. But labor itself tends more and more to become in part a fixed expense, as the trend grows toward unemployment compensation, separation allowances, year-round guarantees of wages and the like. When it comes to the cost of a special product or order, with engineering and development costs, tooling-up, special selling and market development expenses and the like, the usual cost figure bears little relation to reality and if the amount involved warrants it, a study such as that of Fig. 2 is called for.

The fallacy of treating fixed expense as variable is illustrated in the generally accepted methods of valuing inventory, which arrive at the value as the sum of the material and labor expenditures, plus burden.

The case shown below assumes that during the month the inventory of a particular item is doubled. Costs, including a burden on labor cost of 125%, are shown.

Inventory	Material	Labor	Prime Cost	Expense	Total
At beginning of month...	$1000	$1000	$2000	$1250	$3250
At end of month.....	2000	2000	4000	2500	6500
Increase.....			$2000		$3250

Which value more correctly represents the change in the value of the inventory? Evidently the $2000

[1] Based on a talk given May 5, 1944 before the Detroit Chapter of the Society for the Advancement of Management. Discussions with my former colleague, B. E. Goetz and with C. C. James of Stevenson, Jordan and Harrison have helped to clarify ideas as here expressed.

[2] "A Technique for the Chief Executive" by John H. Williams, *Bulletin of the Taylor Society*, April, 1922. *The Flexible Budget*, by John H. Williams, McGraw-Hill, 1935. *The Economics of Overhead Cost* by J. Maurice Clark, McGraw-Hill, 1923.

figure, since it represents material and labor incurred directly for the inventory and presumably recoverable on sale. Increase of $1250 for increased expense is incorrect, for by definition, fixed expenses have not increased.[3]

It may be argued that the prime cost figure in the illustration, $2000, does not correctly represent the value of the inventory. That is true. But neither does the cost including overhead represent the value. The only true measure of the value of an inventory is what it will bring if sold, less the costs of processing to the point of sale. The principal purpose of the inventory figure in the balance sheet is less to show values than changes of value which will affect profits for the period.

In the company mentioned, labor and material unit costs are carried separately and are priced out and totaled separately. Because of the inconvenience of adjusting the income to the change-over, we are still including expense in inventory in our balance sheets.

COMMODITY REPORT FOR MONTH OF _____19__

Column 1	2	3	4	5	6	7
Product	Sales		Shipments	Unshipped Orders	Prime cost of inventory	
	Budgeted	Actual			Opening	Closing
A. Axles.....	$7500	$7000	$6000	$1000	$6500	$5000
B. Bearings.....	3500	3000	3000		2000	4000
C. Centers.....	1000	1200	1000	200	400	300
Total.....	$12000	$11200	$10000	$1200	$8900	$9300

FIG. 1.

In view of price and volume fluctuations likely in the post-war period, the avoidance of the alternately inflationary and deflationary effect of carrying overhead into inventory may outweigh the inconvenience of a change-over.

We have in this company accustomed ourselves to working with the prime cost of inventory, in the monthly statement shown above, which has been most helpful in inventory control.

The first columns of this report are the usual summary of sales. The values in the seventh column are obtained by adding to the opening balances in Column 6, the labor and material purchases for the month, and subtracting the material and labor values in shipments. A separation between raw, in-process and finished material could be made if needed.

The usual retail income statement shows materials at cost, not including overhead or labor. Sales income minus cost of goods gives a gross profit from which expenses are deducted in a lump sum without allocation, to give profit from operations.

In manufacturing accounting the usual procedure is to deduct selling and administrative expenses in the same way, without allocation, but to allocate manufacturing expenses. Save for expenses such as machine cost or depreciation, which really are related directly to specific products or operations, there seems little logic in allocating factory expenses and lumping administrative expenses.

An attempt has been made thus far to point out certain inaccuracies in the mathematical analysis underlying the accepted methods of expense distribution. A more serious economic irrelevance also underlies these methods. However accurate costs may be in a historical sense, they are seldom used by the president to answer historical questions. The sales manager's or president's question is not, "What did this article cost us?" but "For how much can I sell it?"

Consider a hypothetical case or two. A machine has been bought for $1000, with the expectation that it will have a life of 10 years and that during this period 1100 articles can be produced, each of which can be sold at a price which will contribute $1 to the machine cost. Assume that the gross profit of $100 is sufficient to cover risk and an acceptable return on investment. (One would probably not buy a machine with such slender prospects as this break-even-point illustration.)

Case 1. After the machine has been bought, it turns out that only 500 articles can be sold at the expected profit of $1, but the company can if it wishes sell 600 more units at a mark-up of 50¢ each.

Case 2. The machine is purchased and fulfills original expectations. It is also found that in making the article a stamping is produced, originally figured as scrap, which can be turned into a saleable by-product at little or no extra cost.

On what basis should selling prices be made in these cases? In Case 1 the machine cost per unit is definitely $1 per unit for the volume assumed; if orders are taken for 600 at a machine contribution of 50¢, money will be lost. But if the business is not taken, the loss will be greater.

[3] Many items commonly treated as expense are as truly direct costs, proportional to volume, as are material and labor. Commissions on sales, for instance, might well be treated as direct. In the company in which this analysis was applied, we have so far limited direct expenses to the conventional labor and materials, figures for which are available with a minimum disturbance of records or ideas. These items usually include the largest proportional expenses.

In Case 2 the cost of the product presumably has been figured to include the whole $1 contribution for machine costs. Should the by-product be figured to include no machine cost, the whole cost, or some fraction? The only mathematically defensible answer is that each product is chargeable at the least, with that part of its costs which would be saved if the product were discontinued. All the products are chargeable jointly with those other costs, such as the machine cost in this case, which are necessary for operations as a whole, but not exclusively for any single product. For these costs there is no logical basis of allocation; the problem is not to make each product pay its share of costs, but to maximize the return from operations as a whole.

In Case 1, for example, selling 600 units at a machine contribution of 50¢ each involves a loss; one ends the transaction with an outgo of $1000 and a return of $800. But if one refuses the losing business the outgo is the same, but the return is only $500.

A rather important "if" has been taken for granted in Case 1. Can the 50¢ business be taken without imperiling that on which the margin is $1? Sometimes this is possible, as when a price reduction to all customers is made after the initial sales have been made, or when different products are involved. Often, one must ask himself: Will the revenue at the higher price ($1 × 500 = $500) be greater or less than the revenue at the lower price (50¢ × 1100 = $550)?[4]

In considering a question of price reduction, there are other points to be considered. Will it be as easy to raise the price, when conditions again permit of a normal demand? Will a cut invite retaliatory price cutting? Will laws against price discrimination be violated if the cut is made?

If the price of 50¢ is regarded as permanent, rather than as a salvaging operation, it is clear that the price is insufficient to provide replacements.

An ethical question is involved in price discrimination. But can prices be made without discrimination? If one were to price strictly in accordance with marginal costs, the cost of the first article made on the machine would be $1000, plus whatever unit processing costs were involved. The cost on each succeeding article would be the unit processing cost only. Contractors often do charge to the first job the full cost of the equipment needed for it, subsequent uses being clear profit so far as machine costs are concerned. Usually one averages the initial costs over the total expected sales. But since one cannot hit the nail on the head in all estimates, the realities of marginal revenues make discrimination difficult to avoid.

In pricing electric power, it is common to charge retail users say 7¢ a kilowatt hour, while large users, who can generate their own power at a cost little above that of the utility, may get a rate as low as ½¢. This cost is probably less than the cost to the utility, were these sales to bear a proportionate share of the cost of equipment and overhead, but it is above the out-of-pocket cost. Is the retail consumer discriminated against? Clark, in a thoughtful analysis of the question of discrimination[5] concludes that such discriminations may benefit all parties. Presumably the retail power user gets better service because of the marginal revenue from the large user, which would not otherwise be obtainable. The case for discrimination becomes stronger, if the preferential prices are publishable, and available to all who can meet the conditions.

Business costs are characteristically speculations. One purchases materials in wholesale lots, buys machines, hires engineers at fixed salaries and enters into a thousand commitments from which he can withdraw only with difficulty and loss, if the original purpose cannot be realized. If these speculations turn out well, the business prospers; if too badly, there may presently be no business. But the issue is determined when the commitment is made.

That presentation of the facts of business will therefore be most useful which shows most clearly, for a given situation, the added costs and revenues of the various courses of action among which there is a choice. While the money for the machine in Case 1 is still in one's pocket, he will not invest in it unless he expects to be able to recoup not only the original cost of the machine, but something from which to build up a reserve for such risks as were illustrated in Case 1, plus a profit or interest from the use of the money, at least as large as could be obtained by any other available use. After the money is spent, if one is fortunate his expectations are realized as in Case 2, but if not, the question is not that phrased conventionally by the cost accountant, "How can I get my money back?" but "How can I get the most back?"

Where much is involved in a cost decision the form of cost comparison illustrated in the simplified case below is useful. A machine A was purchased 6 years ago, and has an expected remaining life of 4 years.

[4] Somewhat oversimplified assumptions have been made throughout this article for the sake of clarity. For example, other cost elements than those shown would probably affect this comparison. But such elements also submit themselves to the analysis.

[5] *The Economics of Overhead Cost* (op. cit.) P. 416.

For $1000 a new machine B can be bought which will have a life of 10 years and will do the work at an annual saving of $200 over the cost with A. Salvage values are negligible. Should the new machine be bought now, or at the end of A's useful life?

COST COMPARISON

Column 1	2	3	4	5	6
Year	Item	Cost, Proposal A (Use present machine)		Cost, Proposal B (Buy new machine)	
		Amount	Present worth[6]	Amount	Present worth
0 (now)	Cost of new machine	—	—	$1000	$1000
1	Saving, new machine[7]	$200	$189	—	—
2	" " "	200	178	—	—
3	" " "	200	168	—	—
4	" " "				
	$200				
	Remaining value of B(9/10 of $1000) 600	800	634	—	—
Total comparative costs.....		$1400	$1169	$1000	$1000

FIG. 2.

Purchase of the machine now would show a saving of $400 if one neglects interest or of $169 if interest is figured at 6% compounded.

The beauty of this type of comparison is that it sets down the expected expenditures or incomes, year by year as they will occur, just as one would in a budget. One is thus less likely to overlook anything. Any number of alternatives may be shown. The period should be long enough to cover the life of the comparison or of the assets considered; it may run to perpetuity if desired. Only the new or out-of-pocket expenses are considered. In the illustration, no charge is made for machine A. It would presumably depreciate in 4 years whether used or not. Replacements would have to be considered in most but not all cases; they would be entered as costs in the years when expected.

The method of reducing these costs to a cost per unit may be just as accurate as the comparison shown in Fig. 2 and may be useful in some cases. In general, Fig. 2 is safer because it does not cover up the important assumption of a given volume of sales, mix it with other incommensurate elements and lose sight of it.

The cost comparison shown in Fig. 2 pictures a single situation; after the decision is made, Fig. 2 becomes a matter of academic interest, save as a means of setting one's sights for the future. For day-to-day routine decisions and information as to condition and trends, another type of report is necessary.

In condensed form, a common type of report on product costs by lines is shown in Fig. 3 below.

STATEMENT OF PROFIT OR LOSS BY PRODUCT LINES, MONTH OF _____19__

Commodity	Shipments	Materials	Labor	Burden	Total Cost	Profit	Loss
A. Axles...	$6000	$1000	$2200	$2750	$5950	$ 50	
B. Bearings	3000	1000	1000	1250	3250		$250
C. Centers Etc.....	1000	300	—	—	300	700	
Totals.....	$10000	$2300	$3200	$4000	$9500	$500	

FIG. 3.

A burden rate of 125% on labor was assumed in this example, obtained by dividing the labor cost of $3200 into the burden for the period of $4000. Apparently product B is losing money and should be dropped.

A company which had spent many thousands of dollars in the development of a new product was confronted, month after month, with a statement like that for product B. It was about ready to drop the product from the line when the data in Fig. 3 was arranged as shown in Fig. 4, using an idea borrowed from C. R. Cary.[8]

While the product B would have to contribute $1250 to expense, as in Fig. 3, to equal the average, the fact remains that if B were discontinued, without filling its place with other lines, the company would be poorer by $1000. The company retained the line and the decision has more than justified itself.

The distribution of overhead is in fact similar (except as noted, for certain expenses which are really direct or variable) to the allocation of joint or by-product costs discussed in Case 2. There is in Fig. 4 an overhead of $4000 which must be met before a

[6] It is often not necessary to take interest into account; in this case, the decision would be the same in either case. Where interest may be a determining factor, the method of reducing future payments to equivalent present sums (which, with interest or earnings until needed, would then equal the required payments), gives an accurate solution. See *Principles of Engineering Economy* by Eugene L. Grant.

[7] The saving could be shown as a credit to B or, as in this case, a debit to A.

[8] "The Use of Product-Line Profit and Loss Statements in the Control of a Multiple Line Business" by C.R. Cary, American Management Association, *Financial Management Series No.* 66, 1941.

profit can be earned. But it is seldom in practice that all lines permit of an equal mark-up; it may often be profitable to take business at less than its "cost" as usually determined, provided it returns a worth-while margin above out-of-pocket costs, utilizes otherwise wasted capacity, and does not raise long-range problems of the type discussed in connection with Case 1.

STATEMENT OF COMMODITY COSTS FOR MONTH _____OF 19__

Column 1	2	3	4	5	6
Commodity	Shipments	Prime cost of shipments			Contribution to expense
		Material	Labor	Total	
A. Axles	$6000	$1000	$2200	$3200	$2800
B. Bearings	3000	1000	1000	2000	1000
C. Centers, Etc.	1000	300	—	300	700
Totals	$10000	$2300	$3200	$5500	$4500
Deduct: General expenses					4000
Profit before taxes					$ 500

FIG. 4.

In using Fig. 4, the executive would have in mind a current mark-up figure, which could be applied either to the direct labor component in costs, or more simply to the prime cost, to indicate the profit which would have to be earned on the average to meet expenses. In this case the mark-up would be 125% on labor or $\frac{\$4000}{\$5500}$ = approximately 75% on prime cost. These figures do not include a sufficient profit and would usually be increased to include one.

The only difference between Figures 3 and 4 is that in the latter the out-of-pocket cost is clearly shown for each product, leaving the executive who uses the report to judge for himself what contribution each line can make. It is his job to make the total adequate; he will constantly be studying the less profitable lines and shifting where possible to a more advantageous application of the productive effort.

The statement in Fig. 4 can be set up in various ways. Where machine costs or depreciation are widely different for different products, it would lead to serious distortion of costs to throw them all into one lump of expense and apply them impartially to all lines. At the same time the executive should know his bare out-of-pocket costs so that he is free to judge how far he can go in utilizing off-season or other wasted capacity. Fig. 5 makes this judgment possible.

COMMODITY COSTS INCLUDING DEPRECIATION FOR MONTH OF _____19__

Commodity	Shipments	Less prime cost		Gross Mfg. Profit	Less Deprec'n	Contribution to expense
		Matls	Labor			
A. Axles	$6000	$1000	$2200	$2800	$800	$2000
B. Bearings	3000	1000	1000	1000	200	800
C. Centers, Etc.	1000	300	—	700	—	700
Totals	$10000	$2300	$3200	$4500	$1000	$3500
Less: General expense (exclusive of depreciation)						3000
Profit before taxes						$ 500

FIG. 5.

Fig. 6 below shows a statement adapted to clearly departmentalized operations, such as the separation of manufacturing from jobbing.

STATEMENT OF COMMODITY COSTS FOR MONTH OF _____19__

Commodity	Manufactured items			Jobbed items			Totals
	Shipments	Prime cost	Contr. to expense	Shipments	Prime cost	Contr. to expense	
A. Axles	$6000	$3200	$2800				
B. Bearings	3000	2000	1000				
C. Centers				$1000	$300	$700	
Total contr. to Mfg. exp.			3800				
Less: Mfg. expense			2800				
Contribution to general exp.			1000			700	$1700
Less General expense							1200
Profit before taxes							$ 500

FIG. 6.

As in this statement, those expenses related to a single operation or group may be successively drained off and applied, leaving those which apply to larger groups or to all, to be applied at the proper point.

Does the philosophy of pricing here outlined square with realities? In a competitive market, prices do not depend on any one manufacturer's costs, but on the general interaction of supply and demand, the necessities and costs of the marginal buyer or seller,

who will enter or withdraw from the market with any price change. This is true in real life; the business man asks himself "what did this cost me," principally to make sure that the marginal or added cost of the proposed sale is less than its marginal or added revenue. There are times when one does well to reduce an inevitable loss, other times when profits are for the moment out of all proportion to the costs. Historical burden costs are, in this sense, relevant to the problem only when they enable one to anticipate what others will charge.

There are, however, many situations in which it is difficult to determine precisely the competitive or market price, as in bids on special machinery. For such cases the procedure of working from the prime cost to the practicable mark-up, checked against an average figure, differs little from the use of a historical cost, except in the increased scope given to the executive's judgment.

No doubt the reader has been asking himself, "What would happen if a salesman were to make prices from a statement like Fig. 4?" Undoubtedly prices and profits would take a tail spin, for nothing is easier than to cut prices if some other department must pay the piper. The statement is not intended for such uses. If salesmen must quote prices other than can be set on the basis of an established list or formula, let them get on the end of a wire and talk to the man who must take the responsibility for making the total contribution to expense big enough to show a profit. To this man, Fig. 4 merely clarifies the facts with which he must deal in making real price decisions. It is perhaps a feeling of the inadequacy of the customary historical cost figure which has caused more than one executive to remark, "I can't seem to pin my cost man down to anything." The two are talking different languages. The cost man is interested in balancing his books, the executive in making what is, whether he knows it or not, a marginal cost decision.

In this discussion of the relation of costs to prices, the economist's classical "free competitive market" has been assumed. There are increasing areas in business, in which such a market gives way to a semi-monopolistic or monopolistic, and therefore an increasingly government-regulated, market. With the question of the public regulation of prices it is not the purpose of this paper to deal; Clark's ideas[9] on this subject will be found suggestive. However, it may be remarked that while the problem of determining the optimum profit differs in a monopoly from that in a competitive market, and while questions of public interest and conflicts of private interests introduce a new calculus of values, social as well as financial, the approach is still essentially one of marginal costs. The problem, socially as well as financially, is still the most productive utilization of assets in a changing situation.

It may be questioned whether the public interest would not be better served were the emphasis in cost thinking shifted from "recovery of investment" to "best utilization of investment." The tremendous needs of the war have made us more than ever conscious of the social costs of idle capacity and idle men.

At first glance, the substitution of an average "contribution to expense" may seem like merely a new and unnecessary way of applying the old familiar burden rate. It continues to be necessary, if one is to stay in business, to recover all costs including miscalculations. But the economist's analysis of the joint costs which form so large a part of burden, is better than the cost accountant's. He recognizes that there is no fixed basis of distribution, that the problem is to secure the combination of prices and volumes which yields the greatest total return. The difference in interpretation is a very real one. Until one has accustomed himself to the new concept, "contribution to expense" there is a very real danger of underestimating costs, and any change to the suggested set-up should be used at first with caution. Once he has shifted his cost thinking to the new base, many modifications of the basic report, such as suggested in Figures 5 and 6, will suggest themselves, and will permit of a better and more realistic analysis of the causal relationships between business decisions and costs.

An incidental gain is likely to be the simplification of reports and reduction of clerical work. The idea seems particularly usable in connection with standard costs, the strength of which has always been the control of direct costs, and the weakness, the complexity and uncertainty of the standard burden rate.

[9] Op. cit.

Psychiatry in Industrial Accidents*

By LOWELL S. SELLING, M.D., Ph.D., Dr.P.H.

Detroit, Michigan

ONE of the basic problems that confronts the energetic and aggressive scientist is the problem of cultural lag, i. e., the difficulty in making other people utilize knowledge which is in advance of present-day practice. In spite of the fact that many excellent techniques have been devised to segregate, locate, and train employes in industry, a majority of plants have progressed very little in their psychological practices in accident prevention during the past thirty years.

It is quite true that if the management in one plant knows that a competitor has introduced a new technique, the plant which does not yet have it may adopt it immediately, so that it can point to the fact that it is up-to-date. Unfortunately, in adopting new techniques, particularly in psychology and psychiatry, many of the attempts so far have been set up in a vacuum, for the personnel of the plant was not yet ready for them, nor was management able to select properly trained personnel to introduce new policies and to indoctrinate those concerned in such a way that they might be able to utilize the policy properly.

No one can deny that there are plants with personnel departments who have been properly trained in the use of tests, and who are able to use these tests and properly place the employes throughout the plant. It is true, too, that medical departments today undertake a great deal of the problem of deciding who is physically able to go into a specific job and who is not. Prior to the war, the plant physician's job as a rule was merely that of selecting those who were in the best physical condition and rejecting all others. With the decrease in available help, the personnel work of the physician has consisted in setting up a number of standards, below which it is unsafe to employ people in spite of the shortage, because of their ages, blood pressures, basic weaknesses, heart conditions, or whatever else in the way of defects the physical examination turns up.

When an accident occurs in a plant, it may be due to a number of causes. It may be due to improper equipment, and by that I mean that the machine itself is poorly cared for or out of condition. Second, it may be due to a break-down of the machinery. Third, it may be due to a lack of adequate safety devices. Fourth, it may be due to faulty instructions as to handling the machine, or faulty precautions in the plant in general, such as allowing oil to spill from passing trucks where someone might step in it and slip. Fifth, and last, the deficiency may be one of personality, and in the term personality I include both physical and mental make-up of the worker.

Because of Federal regulations, most plants are able to point to good mechanical safety procedures. Where there is danger of injury to the eyes, goggles are worn. Toes are protected from falling castings by reinforced toe-plates on the workman's shoes. Plant housekeeping is kept up-to-date, and wire circuits are inspected frequently, so that mechanical failure of equipment is cut to a minimum.

Because of the limitations in personnel, the situation here presents a marked cultural lag. Even in some of the most advanced plants, from a mechanical standpoint, it has not yet occurred to the personnel department or to the physician to interview the employe who has just had an accident, for the sake of determining whether future accidents of a similar type could be prevented. Yet there are some workers in large plants around Detroit, constituting a seventh or eighth of all the employes in a division or plant which numbers thousands of employes, who have very close to 100% of all the accidents. These people are known as accident-prone individuals, and it is a misnomer to use this expression to cover the individual who has merely had an accident or two, if it can be shown that the accident may be partly due to poor equipment, poor management, unnecessary pressure on the worker, or some similar external cause.

There are a few plants around Detroit which, surprisingly enough, permit their medical departments to follow up the accident cases. There is one body company, for instance, that keeps all accident records on punched cards, so that those persons in the plant who have several accidents can be culled out and investigated. Unfortunately the punched cards carry

* From the Psychopathic Clinic of the Recorder's Court, Series I. No. 3. Read at a meeting of the Neuro-Psychiatric Society and the Psychological Club, Milwaukee, Wisconsin, January 27, 1944.
Reprinted from INDUSTRIAL MEDICINE, June, 1944.

such data as time of day and day of the week, rather than mental states or psychiatric diagnoses. It is too much to hope that we will reach a standard of plant management in the next few years which will permit the gathering of psychiatric data in the same way that we gather mechanical and temporal data.

Causes of Accident Proneness

Studies have been made from time immemorial to determine why we have industrial, traffic, and home accidents. Millions of dollars have been spent by insurance companies in an attempt to secure data which would be useful in preventing accidents. In the matter of traffic accidents, a great deal has been done. Some of it we presumed before we had data and have, by collecting information, only gained further evidence, but there have been some unique findings, also. For instance, research has shown definitely that the use of alcohol is an important factor in the causation of traffic accidents, while physical disease has a minimum of responsibility. Because of various mechanical and psychological elements, it has been learned that accidents occur more frequently at night, and such factors as over-driving one's headlights or driving after spending the evening in a beer garden and imbibing continually during the evening play an important part.

In the industrial field, only a few factors of this sort have definitely been shown, but what is known is summarized below:

First, there is a relationship between nutrition and industrial accidents. In the Detroit area, we have plants that have tried providing a high-caloric mid-morning and mid-afternoon snack. There has been some improvement in their accident record. We do not yet know whether the snack was the sole cause, but observations in the field of industrial nutrition seem to point out that the hungry and undernourished workmen are more accident-prone.

Second, there seems to be an emotional protest against mechanical safety appliances. This not only holds particularly true on piece-work jobs where the number of pieces produced is found not to be as great where safety appliances are used, and a protected machine is run with the guards off, but it is just as true in plants that are routinely operated on a daily wage basis. There is a connection between absenteeism, frequent job changes, and accidents. The individuals are chronically protesting and the protest makes itself known in one of these three ways. Poor lighting and excessive noise are evidently responsible for some accident proneness, particularly among those with defective vision or hearing.

The most important reason for accident proneness, according to certain surveys, including our own experience with traffic offenders, is faulty attitude. Given a man who has poor eyesight or inferior hearing, and put him at a machine where he will have to work hard and where there may be perhaps no adequate protection for him, and he won't have accidents if he has the attitude that he is going to do his best to prevent them.

The individual causes for accident proneness seem to be, first, physical inadequacy, particularly in the special senses; second, psychophysical inadequacy; third, mental deficiency and neuroses; fourth, preoccupation with other problems; fifth, dissatisfaction with a part or the whole of the plant's set-up; and sixth, a bad safety attitude which may include recklessness, indifference, or antagonism to law and order.

Physical Inadequacies

A great deal of the thinking in plants about physical fitness for jobs had to do with the all-or-none capacity of the workman. Either he was well enough to stay on the job, or he was so weak that his condition might make it necessary to pension him off before he had been of enough value to the company. This meant that prior to the war, neurological cases were just not hired. If a man was tremulous, or had an old poliomyelitis, his chances for employment were slim. During the past two and a half years, however, the situation has changed markedly, and there is just as much to be condemned in the present fact that if a man can get out of his wheel chair and get over to his machine, he is hired, as there is in the former attitude. There has been a minimum of auditing of jobs with relation to physical and psychophysical capacity.

Going through a plant in the Detroit area, one sees monocular individuals operating pieces of equipment which require wide angle vision, elderly men with a coarse arteriosclerotic tremor operating small grinders or attempting to do precision work and epileptics operating tremendously heavy hammers and punches with wide jaws into which they could fall. This is only a sample of what one can see. The larger the plants, the more misfits there are, and all of these people are accident-prone. The man who needs good binocular vision in order to do his job properly is apt not to see the projecting piece of metal that is coming out, and may catch his clothes. The shaky arteriosclerotic may cut

himself on a small piece of steel he has just been sharpening, and the epileptic may fall under his press and be crushed. These examples are not far-fetched. They come from actual cases which have been brought to my attention.

I am pleasantly surprised to see the improvement in the plant physician's office with regard to its auditing of plant equipment for physical traits. But not nearly enough has been done, and there are still too many plants where nothing is being done. Those plants which are employing part-time physicians whose hearts are not in the work but are merely helping out for the duration or for the extra remuneration are the worst sufferers. Large organizations like Westinghouse, General Motors and Chrysler seem to be heading the list of successes, although their medical directors tell me that they still feel there is much to be done.

Certain difficulties in some large corporations rest upon the lack of uniformity in medical practices throughout the various sub-divisions of the organization. Some organizations having to do with plant safety, such as the National Safety Council, should have an inventory of machines, in order to classify them from the standpoint of what the disabled, partially disabled, elderly, and those having various physical disorders can operate with safety. This is extremely important for returning veterans. However, even if such a series of specifications did exist, it would require considerable intelligence on the part of the personnel division, plus the physical, in any plant, to evaluate the particular amount of physical disability in terms of safety.

Psychophysical Inadequacies

This is a term much better known to the trained psychologist than to his medical confreres. During a recent psychiatric meeting, I invited one of the most important psychiatrists in the air forces to come to our Traffic Clinic to see the equipment which we have built for making psychophysical evaluations. He said he wasn't interested, but I am rather more inclined to believe that the term was unfamiliar. In order to make sure that the term is clear, I shall define it as that department of psychology which has to do with the numerical expression of human motor actions or judgments. In other words, tests are set up to measure the length of time that it takes a person who hears a horn to step on the brake, or his reaction may be measured with regard to speed of stopping his car when he sees a red light. In the field of judgment, we are inclined to use tests of depth perceptions, evaluation of speed of moving objects, and visual acuity to glare. There are other tests which might be used, but these are the most practical and have come into most common use.

Psychophysical testing of persons in industry had gone a long way before the war in certain selected plants and industries. This is particularly true in those corporations where motor vehicle operation was the chief cause of accidents. Several street-car companies have very complete psychophysical set-ups. Some trucking companies, as well as the Greyhound Bus Lines, also were interested in this field.

The evaluation of psychophysical capacity rests more or less on the same basis as the evaluation of the physical capacity. There are certain jobs in any plant which are dangerous to the person or others in the department, if an attempt is made by one with a slow reaction time to do the job. For instance, a person with a low reaction time who is inexperienced, would not be allowed to feed a job printing press unless it was slowed down to a commercially impractical rate. He could not coordinate so perfectly as to slip the already printed paper or page out and replace it at the same time with a clean sheet. On the other hand, a man with a slow reaction time might be quite useful in a packing and shipping department.

In a practical sense, some culling out has been done along psychophysical lines by the trial and error method. A man with a low reaction is tried on the production line and fails. He is therefore removed. Meanwhile, some disturbance has occurred on the line, some valuable raw material has been lost, and the experience may have had an unfavorable effect upon both the worker and his chiefs. Had a preliminary scientific psychophysical examination been done, he could have been properly placed.

It is the man with the border-line reaction time who seems to have the accidents, as he is not so slow as to be obviously incompetent and yet he is not fast enough to be able to do the job without strain and consequent fatigue. Slow reaction time, of course, suggests that other examinations be made to see if there is a beginning arteriosclerosis, a history of chronic encephalitis, or some other disorder which would account for it. Tests of judgment may also be used to eliminate those who would perform some act which would result in an accident. A man who has defective depth preception might stick his finger too deeply into a machine. This has been seen, and on occasion even with well-guarded equipment.

Mental Deficiency and the Neuroses

Although the problem of the mental defective and neurotic employe is not very large with regard to numbers, it is important because of the great damage that can be done by such employes. The psychotic or insane employe is of relatively minor importance. Usually the family or somebody else takes him out of circulation if he is dangerous and if he has recovered, plans can be made for him within the plant.*

A feeble-minded employe has very poor judgment about his conduct. He will violate plant rules that he sees others violating who are better coordinated, such as removing guards or speeding when driving trucks around the plant, without realizing his own personal limitations. In spite of the fact that these people can be easily culled out by easy and simple tests, there has been an unusual resistance to such tests in personnel departments in Detroit. I am in sympathy with the idea that only trained psychologists should use these tests in so far as possible, but when they are to be used as a rough screen, the plant is safer to use them, knowing they are not exact in the hands of the amateur in psychology, than not to use them at all. Feeble-minded employes cannot be put in charge of equipment which requires decisions and judgment as to how it is to be adjusted. On the other hand, they make good employes where routine is well fixed and where interpersonal relationships are not so close as to be a source of friction between the sensitive feeble-minded and the other employes.

The neurotic employe offers a number of problems. We will see more and more of this as discharged service men are re-employed. There is a vast number of service men being turned into industry today who were given a discharge for psychoneurosis which they either had before going into service or developed while in service. Regardless of whether the employe be an ex-service man or no, the conditions are the same. Some of these psychoneurotics are governed by uncontrollable impulses, one of the most serious being a desire to commit suicide or partial suicide because of subconscious feelings of guilt. Such employes as these never admit the suicidal impulse, in fact deny them and show great reactions to accidents, but their reaction offers a clue to the psychiatrist that self destruction, partial or whole, lies behind the accident.

Another type of serious psychoneurotic, as seen in plants, is the one whose uncontrollable impulses makes him want to harm others who, he feels, are injuring him or making trouble for him. This, too, is on a subconscious basis and sometimes reflects friction in the home when the patient was a child or other conditions which would be hidden from the casual interviewer. In traffic we have seen cases of this sort where the patient almost ran over a policeman and a study of the case revealed that he had such a hatred for his father that any other person symbolizing law and order as the father did was in danger of his life.

Feelings of anxiety oftentimes make the patient unsure of himself. Lying in behind such experiences we often find a childhood feeling of insecurity or an excessive mother attachment or some other type of psychoneurotic conflict, which, if ironed out, might leave the employe a real contributor to his own plant, but which, in turn, if neglected, makes him accident-prone.

Preoccupation with Other Problems

With the increase in knowledge of psychiatry in other fields than industry, there has come a gradual realization that the acts of an individual are not entirely based upon something the matter with the person himself. In child guidance we have the dictum that a problem child is a child of problem parents, and even in courts, probation departments, and corrective institutions where psychiatry has only penetrated by diapedesis, extensive investigations are made into the background and experiences of the offender before any attempt is made to solve his problems. So, in industry, one would expect to find considerable value in investigation of the accident-prone individual's mental life. In the case of those who are prone to traffic accidents we have already seen in our Clinic a large number of people who are physically sound, psychophysically adequate, who had normal intelligence and have no great personality problems, who were so preoccupied with the problems of their business or with the illness of a relative, or even with domestic problems, that their attention was distracted from the job of driving and an accident occurred.

When I asked personnel directors in plants why they do not do more about investigating preoccupation and know more about their employes in small organizations, their invariable answer has been that such studies are not worthwhile, and they point out cases of individuals with grave problems who, over a period of time, have had no accidents. It is quite obvious to anyone who understands the process of having an accident that these workers were so accustomed to the mechanical processes which they have been carrying

* Selling, Lowell S.: "Industrial Psychiatry in Wartime," *Industrial Medicine*, Vol. II, No. 9, September, 1942. 407–411.

out for many years that their minds could safely be elsewhere. But one would be foolish to maintain, because the completely habituated man performing a simple operation is accident-free, that anyone performing a more complex operation who is not as completely used to his job as the first man, might not come a cropper when his attention wanders away from his work.

Domestic difficulties are the most common causes of serious distraction. However, preoccupation with alleged injustices on the job, with the possibility of a strike, with the labor leader or foreman, all play an important part in accident causation.

Dissatisfaction

The problem of dissatisfaction is one which I am convinced is of great importance in accident prevention, yet there seems to be no way of collecting statistics which would show how important it is. There are two reasons for this. First, the superficial reason that the man gives for his accident, such as, "I was careless," or, "I just don't know how it happened." These are usually the accepted reasons. Second, time studies of frequency of accidents are overweighted with such significant influences as the sobering-up period on Monday and the amount of plant production, lay-offs, and other rather extraneous factors. The writer has talked to workers after their accidents with the idea of finding psychiatric causes, and in many instances the workers give no better reasons than those just stated. Yet when one talks to them about other subjects, one finds that individuals with several accidents over a short period of time express great antagonism toward the management of their plant, or to the shop stewards with whom they have immediate contact. In some cases the resentment is so great that one might suspect that these men are subconsciously causing themselves to have accidents in order to punish or at least aggravate or disturb the management or to distract the union leaders.

Conflicts in personalities between the foremen and men seem also subconsciously to play an important part. The men become so vindictive that one would almost suspect their personalities operate as a physical entity to push them into machines, or to make them do poor work.

Bad Safety Attitude

The term "bad safety attitude" covers a multitude of personality problems. But these problems manifest themselves in essentially the same symptoms, namely, unwillingness on the part of the employe to fulfill safety rules and to show an interest in doing those things that would prevent an accident to himself or others. Sometimes this bad attitude is set up by circumstances outside the man's own experience. But usually there is some personality factor which is important. By this I mean that occassionally cases occur where a reprimanded man has taken the guards off his equipment merely to aggravate the man who has been disciplining him, "forgetting" that he himself might be hurt.

After a lecture on goggles, one will find a certain number of persons whose attutide is not good and who have behind this bad attitude a personality disorder, taking off their goggles as a protest. In the prevention of bad attitudes, one finds additional use for personnel departments. In some moderately-sized plants, particularly new ones where personnel work is up to a high level and where the employes in this department are trained psychologists, we find that the attitudinal type of accident almost disappears. When the employe first reports for work, he is given an induction course. He is shown safety movies. He is told of the hazards of his work. He is shown his machine by a trained instructor, with special emphasis on precautions that can be taken. If he works in a plant where there is danger of eye injury, he is not allowed to go into the plant until he gets goggles and puts them on, and this is also true where employes need special shoes, respirators, or other equipment.

In the case of women, top-notch plants do not allow them to go to work until they come properly equipped in safe work clothes and having some article to guard their loose locks. Because they come on the job in a proper state of mind, many of the disturbing experiences that occur to them as they work in the plant will not cause a reaction contrary to safety procedures. One of the most difficult problems to overcome is the line between the executive departments and the employes, where the "front office" permits its employes and executives to go through dangerous parts of the plant without the same safety equipment that they demand of the machine operators.

Conclusion

The time is coming, particularly since we will be getting more men who will be mentally and physically handicapped, who are veterans of the war, when industrial safety will have to be more than a set of rules and proper mechanical equipment. The individual capacities and weaknesses, the physical and mental

needs of the worker who is to do a particular job, will need to be evaluated in terms of the individual who wants employment. This evaluation will have to be done by the plant physician, with the assistance of competent, psychologically trained personnel workers. Each plant operation will have to be audited to see what kind of people should be employed.

If the demands of the machine are greater than the number of available men of the type needed, the specifications of the job need to be changed. Employes will have to be known better to personnel departments, so that cases of accidents due to preoccupation with other problems can be prevented by the advice of competent advisers in the plant, or even by the worker's removal until the problem is smoothed out.

Lastly, bad attitudes should be prevented from the start by good indoctrination procedures. The good attitude toward safety which is engendered in the beginning can very well be carried on through further interviews and contacts by personnel and medical departments who must show a real interest in accident prevention from a psychologic standpoint.

REVIEWS

Making and Using Industrial Service Ratings. By George D. Halsey. New York, Harper and Brothers, 1944, pp. xxii, 148, $2.50.

Reviewed by D. J. BOLANOVICH, Personnel Administration, Radio Corporation of America, Camden, New Jersey.

George D. Halsey, personnel officer of the Farm Credit Administration of Columbia, South Carolina, gives an exposition of current practices in employe rating plans as applied to factory, store, and office. The book is comprehensive in its coverage.

For personnel men faced with the task of organizing and administering rating programs, Chapters VIII and IX should be of real service. In these chapters on installing and administering service rating programs much emphasis is laid on conferences of supervisors for planning the program as well as carrying it out. The fundamental principle is closely adhered to that "the greater part those who carry out any plan have in the making of that plan, the greater are its chances for lasting success." The final three chapters include: X, Typical Statement from an Employe's Handbook; XI, Using Service Ratings in Training and Correction; and XII, The Supervisor's Problem Cases.

The author is pointed in presenting his case for the use of service ratings. In the second chapter he lists the six conditions he considers necessary for success in service rating. These are (1) Top executives should be actively interested. (2) Supervisors should understand and approve the plan. (3) The rating form used should be skillfully designed. (4) Clear, specific, detailed directions should be used. (5) Thorough and continued training for raters is essential. (6) Ratings should be skillfully and sympathetically used in training and correction.

The discussions are elaborated and clarified throughout with case illustrations. The presentation of rating forms is used skillfully to develop seven standards given by the author as vital to securing accuracy and uniformity in rating. The standards are: (1) qualities (items) rated should be so selected that every quality included is important to optimum job performance, (2) qualities should divide job performance into enough distinct parts to facilitate analysis to determine reasons for unsatisfactory performance, but not into so many parts that there is confusion, (3) the list of qualities should deal with the employe's *attitude* as well as with his *aptitude* and *production*, (4) to each quality there should be assigned a *weight* so that the total numerical score will represent approximately the total merit of job performance, (5) definitions and instructions should be worded so that they will be understood alike by all who read them, (6) in planning the wording of definitions and instructions, thought should be given to probable effect on employe feelings, (7) the design of the form should include devices that minimize or detect carelessness or lack understanding and that increase objectivity of ratings.

Whether or not the author is justified in demanding item weights as a fundamental standard for rating forms is open to question. Probably his discussion of weighting items is the weakest part of the book. Recent statistical studies of rating results, such as Ewart, Seashore, and Tiffins's* work leave some room for doubt concerning the merits of preassigned weights.

The chapters concerning the installation and administration of rating plans outline methods for: preliminary study of the organization's special needs; introduction of the subject to supervisors; planning of rating forms and procedures; informing of employes; fixing of responsibilities; and considering appeals of employes. To round out this section, one chapter is used to quote statements from an employe handbook regarding service ratings, and the two final chapters present illustrations of the use of ratings at the point of supervisor-employe contact.

This book meets a definite need for concrete and comprehensive presentation of problems and procedures in the making and using of service ratings.

Technology and Livelihood. By Mary L. Fledderus and Mary van Kleeck, Russell Sage Foundation, New York, 1944, pp. 237.

Reviewed by EVELYN BUCKLEY, *Management and Personnel Consultant*, New York.

The relationship of the changes in productive forces resulting from science and invention to the individual's opportunity to earn a living and the basis of living standards is the theme of this latest study of the Misses van Kleeck and Fledderus. Not since Fred Henderson's "The Economic Consequences of

* Ewart, E., Seashore, S. E., and Tiffin, J., "A Factor Analysis of an Industrial Merit Rating Scale" *Journal of Applied Psychology*, 1941, vol. XXV, pp. 481–486.

Power Production" has a study in economics pointed out this relationship so clearly. Henderson's book outlined the subject in broad, general terms. This one delineates it with specific reference to Mineral Industries, Agriculture, Construction Industries, Transportation and Communication.

A challenging discussion of labor requirements and employment opportunities under the impact of technological change shows that we are faced with a declining need for human labor. Although this is in some measure compensated for by the fabrication of many new products, there is still a tendency toward constantly increasing output with ever diminishing need for human work.

There is impressive data which seem to confirm the fact that labor requirements per unit of product have decreased with *actual* loss of employment opportunities in the basic industries.

The summation is an eloquent appeal for the selection and adaptation of science and invention to socially desirable ends, and for the broadening of economic studies to cover the larger subject of social administration of the new technology. It suggests three considerations to guide further research toward the higher standards of life:

(1) Science is unified by the interrelation of its subject matter.

(2) Man's life in the community must be viewed as a whole—home, work, the national, regional and world-wide situation.

(3) Change is constant, and a change in any part affects the whole and all other parts.

Industrial managers should be especially interested in this book as their work contributes so much to the increasing efficiency of production. Many SAM members will be especially interested in the appendix by Miss Fledderus on "Optimum Production in the Workshop." While the volume does not attempt to solve the problem, it points to the need for and serves as a guide to further research.

Employee Counseling. By Nathaniel Cantor, McGraw-Hill Book Company, New York, 1945, pp. viii, 167, ($2.00).

Reviewed by Ordway Tead.

The publication of this book is tangible evidence of the growing interest in employe counseling. The book will have informative value to all executives concerned with this problem. It assigns this activity to its rightful place in the personnel program and it gives interesting and helpful sample interviews. Whether or not the more technical psychiatric discussion will interest managerial readers may be doubted. But the author seems to me correct in urging that the post-war period will create a growing need for the type of psychiatric understanding here set forth and for the adjustment work which it will entail. With the conclusion that counseling activity as at present set up will be minimized after the war, I find myself in agreement. Altogether, this is a useful addition to the meager literature on a movement which has disclosed weaknesses in our personnel programs for which new types of provisions have to be made.

Necrology

B. EUGENIA LIES

1898 JANUARY 28, 1945

With the passing of B. Eugenia Lies, known to her intimates as Jeannie, the management movement has lost one of its distinguished women adherents.

She was graduated with honors from Smith College in 1918 and then worked at the National City Bank for a short period. After that, she went to R. H. Macy & Co. where she remained from 1919 to 1936. Her co-worker and successor there, Miss Marie P. Sealy, writes the following of her accomplishments:

"In 1920 she was made the head of the Research Department and immediately changed its name to 'Planning Department' since she envisioned the application of Taylor's principles of scientific management to the store's organization and operation.

"There followed in a period of 15 years a series of brilliantly executed studies through which every applicable aspect of scientific management was introduced. The problems included organization, systems procedures and design of forms, wage incentive plans, production standards based on time study, standardization and improvement of handling methods in the packing and other departments which handled literally thousands of diverse items, layouts of selling as well as non-selling departments and basic principles for personnel budgeting and statistical analyses of "Flow of Work" as a means of budgeting hours of work and number of employes in relation to a highly fluctuating volume of business.

"She presented her first paper before the Taylor Society in 1925 in which she described the organization and scope of this work. In 1936 this story was brought up to date in a paper presented before the Society in Philadelphia."

After leaving R. H. Macy's, she joined the staff of the Bureau of Retail Research at the University of Pittsburgh. During the present war she was a civilian counselor to Col. Oveta Culp Hobby, director of the Women's Army Corps. She served as a Director of the Taylor Society and was for many years active in the New York Chapter and served as its Secretary. Miss Lies is truly one of the pioneers of the management movement—on two counts: her application of the principles to the field of Retail Management, and her leadership in demonstrating that women can be successful in the use and combination of the techniques of scientific management with a human point of view.

EVELYN BUCKLEY